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A design thinking approach to professional development in reasonable adjustment: A new methodology for trainers in the vocational education and training sector of Western Australia

Russell Thom
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A Design Thinking approach to Professional
Development in Reasonable Adjustment: A new
methodology for trainers in the Vocational
Education and Training sector of Western Australia

This thesis is presented in partial fulfilment of the degree of

Master of Arts by Research

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Abstract

This research has demonstrated that design thinking (DT) could be used as a professional development (PD) methodology for Vocational Education and Training (VET) trainers in understanding and applying reasonable adjustment (RA). The use of design thinking has the further benefit of raising the trainer's empathy and understanding of the impact of injury and disability upon a person's life and the significance of RA outside of the training context.

A workshop (PD session) was designed and conducted to explore the relevance and success of the PD framework and the use of design thinking in developing an understanding and applying RA. The structure of the PD, the methods and the tools used supported the development of empathy, which facilitated new learning in RA through action and experience, and assisted in the transformation of the trainer's point of view and assumptions. The PD increased the trainers' confidence by utilising the existing skills and knowledge of the VET trainers and the inclusion of individual work and group work. The RA problem posed by the PD assisted in creating motivation for learning as it provided expectancy, instrumentality and valence. The outcomes of the workshop identified the relationship between the participant's willingness to participate and the development of new ways of thinking. These new ways of thinking assisted in the development of empathy, which allowed for new learning. The use of design thinking as part of the PD enhanced the development of empathy, facilitated learning including the ability to understand and apply RA.

The declaration page
is not included in this version of the thesis

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Section one: Background

Chapter One: Introduction

1.1 Background to the research

This research explored and examined the application of design thinking in professional development (PD) workshops as the means to provide VET trainers with skills and knowledge about reasonable adjustments (RA). A Reasonable adjustment is a legal responsibility of all education providers in Australia when providing educational services to people with a disability provided under the Disability Standards for Education 2005 and the Australian Disability Discrimination Act 1992. A reasonable adjustment should allow a student with a disability to participate in education on an equal level as a student without a disability (Cumming, Dickson & Webster 2013; Department of Education, Employment and Workplace Relations, 2012 pp. 44-46). The decision to commence this research derives from personal and sectoral reasons. Personally, it represents a journey of more than 20 years, from design education to work and then back to design education. In a broader perspective, creating a clear understanding of reasonable adjustments and how to apply reasonable adjustments for students with disability within Vocational Education and Training (VET) has a personal and professional importance.

1.2 Personal

I have worked in multifaceted roles and experiences that allowed me to realise the broad application of design in sectors and professions that are not commonly seen as design or creative industries. I wanted to use my experience, skills and knowledge to conduct research into new and innovative ways of providing professional development in reasonable adjustment. After a career in mixed industries I had not considered myself to be a designer, in the traditional sense, however to do this research I would have to return to design education. This led me to the term and concept of 'design thinking' and the changes that have been occurring within the design industry. My personal experiences that have planted the seed to this research include:

- **Designer of Human Services:** After completing my Degree in 1994, I accepted work with recreational service for young men with Muscular Dystrophy. I started as a support worker with no experience, twelve months later I became the manager. My line manager was innovative and progressive in her thinking and development of programs for people with

disability. The service challenged the norms and redefined what it meant to provide support rather than care for people with disability. The team used “possibility thinking”, and reframed service provision challenges with the simple premise “why not”. It was ground breaking service for its time. This experience and working in human services showed me the value of the willingness to learn, working in a multidisciplinary team, user centred design and the importance of experience when making choices.

- **Designer as an Educator:** My interest in training and reasonable adjustment developed while owning and running Industryi Pty Ltd a Registered Training Organisation (RTO). In 1997 we started research to identify training needs, the opportunities and barriers for people with disability in training. This research led to a pilot training program funded by the Western Australian Department of Education and Training (WADET) to test the provision of accredited training in a community based setting, with the appropriate supports and without discriminatory enrolment limitations. This resulted in Industryi delivering over 17,000 hours a year of training for people with disability in qualifications in Work Education, Information Technology, and Art and Media. This outcome is significant as the pilot occurred seven years prior to the implementation of the Disability Standards for Education 2005, which mandated equality for people with disability in education and training. In 2007 to achieve the final outcome of mainstream delivery Industryi's funding, training programs and staff were transferred to a Government RTO.
- **Designer of Business Systems:** Industryi provided business systems and audit compliance experience and skills that could be utilised in a commercial environment. These skills allowed me to work at a Contract For Difference (CFD) broking firm and as the Practice Manager of an Accounting firm. The commercial experience I had gained from both of these roles was invaluable. These roles gave me the opportunity to be involved in business systems and service design. This commercial experience provided me with an understanding of the role of the naive participant and the end user in systems and service design.
- **Multi-disciplinary Design Consultant:** In 2008 I moved from the commercial business sector to a social enterprise. The combination of the human services, training and commercial business experience was essential in developing and running a social enterprise. However six months after commencing this work I contracted Ross River Virus and within two weeks was too ill to work. This was my first experience with an illness that could create an incapacitating impact upon my life. The ramification of the virus and subsequent physical incapacities reduced my work tolerance, affected my concentration levels and capacity to earn. This then created impacts on my family and our quality of life.

The following seven years were a combination of new work and life experiences, development of skills and knowledge and events that

seemed to occur with serendipity. During this time I established a web development business, consulted to small business, worked as contract lecturer in VET and Higher Education, piloted a graphics training and metal fabrication training for students with disability, participated in research projects, developed PD resources in RA and provided PD for VET lecturers in RA. Along side this, I established a human services consultancy business and a social enterprise. Furthermore the results of an assessment undertaken as part of one the research projects revealed I was severely dyslexic. It was at this stage that the idea for further study emerged. In 2012, I made the decision to become a freelance multidisciplinary consultant and a part-time student.

Design thinking extends the role of the designer and design beyond the artefact. This view of the designer and design created synergies with my own career path, experience and thinking. My research has provided me with a unique opportunity to explore and understand design thinking, the role of the designer, develop my own design practice and prototype training in reasonable adjustment. To do this I researched design thinking, examined the design thinking process to discover if design thinking can facilitate attitudinal change in learning.

1.3 Problem in the sector

The ability for people with disability to access and participate in Vocational Education and Training (VET) in Western Australia has been supported by the introduction of the Australian Disability Discrimination Act 1992 (DDA) and The Commonwealth Disability Standards for Education 2005 (DSE). Even though the DDA prohibits discrimination of people with disability in education and training there remain barriers for people with disability to achieving successful outcomes in VET. The removal of these barriers is complex and requires an examination and an understanding of the historical changes that occurred in the VET sector, how the implementation and the introduction of Competency Based Training (CBT) had an impact in conjunction with the introduction of legislation that supported the rights of people with disability in Australia. The examination is not to assign blame, it is to identify that this seemingly simple problem is more complex than it appears.

The VET sector is an intrinsically human system; VET trainers provide training and assessment services to learners for employers to provide services to or for their customers. This human element means that the system is strongly influenced by the stakeholders; when the human element is ignored the system as a whole suffers. Since the introduction of the VET reforms and CBT in 1989, numerous studies have identified problems created by these reforms on the VET sector and people with disability (Billet et al., 1999; Connor, 1993; Guthrie's, 2009; Misko, 1999; Reynolds and Barnett, 1993; Thomson, Saunders & Foyster, 2001; Toohey, Ryan,

McLean, & Hughes, 1995; Watson, 1993). Therefore an analysis of the historical context and the effects of these VET reforms on the trainers and people with disability are important, as it will inform the design of the professional development program. The choice of method for developing a solution should have its foundation in a human centred approach as the solution should address the needs of the people within and external to the VET sector.

1.4 Justification for the research

My career path has led me to understand and experience the complexity that exists for people with disability to participate in activities that are fundamental to their personal development and life. Access and participation in education and training is a fundamental right for all people in Western Australia (WA) (DDA, 1992). However, people with disability experience barriers that restrict their access and participation in education and training, and ultimately their ability to complete their studies. This inability to complete training and education further affects their capacity to obtain employment, to realise their full potential and to have a valued role in the community (Bennett, 2011). The logical and simple solution to increasing participation and success for people with disability would be to remove the barriers that they experience while participating in education and training. However, finding the solution is where the simplicity ceases and the complexity begins.

The research was conducted within the Vocational Education and Training (VET) sector of Western Australia (WA). The VET sector in WA is a complex and highly institutionalised system. In WA there are 2537 VET providers, of which 11 are large government organisations, historically called TAFE colleges. The VET providers are responsible for the delivery and assessment of training in WA to school age students and adults. The VET provider's core business is the delivery of training and the assessment of trainees that meets the employment demands of the WA industry sectors (Seares, 2014).

My research focused on the application of design thinking methodologies and tools as a professional development method for trainers in applying reasonable adjustments for students with disability in VET. The review of the DSE in 2010 identified that there was a need for increased acknowledgement of reasonable adjustment by Registered Training Organisations (RTO). This included the development of training in RA and the training of VET trainers in the application of reasonable adjustments (Department of Education, Employment and Workplace Relations (DEEWR), 2012). The problem of removing the barriers faced by people with disability in VET has been considered and defined in this research as a “wicked problem”. Design thinking has been identified theoretically as a possible

method for generating solutions to wicked problems, however this needs to be applied and validated in practice.

IDEO has used design thinking successfully in the school-based education sector however the application of design thinking to address the barriers for people with disability in VET has not been investigated. The barriers identified in the literature and the recommendations of the authors reveals that there is a gap in the current knowledge. This gap provides an opportunity for research into how design thinking methodologies can be used to address barriers faced by people with disability participating in training in the VET sector. My research outcome suggests that design thinking could benefit the VET sector as a PD method for training VET trainers in RA, while having the added benefit of developing empathy for people with disability.

1.5 Research problem and research questions

Main question

How can design thinking be applied as a professional development training methodology for VET Trainers in the area of reasonable adjustment?

Sub-questions:

1. What design thinking methods or tools can be used as part of the professional development training in reasonable adjustment?
2. What changed in the participants understanding of reasonable adjustment after the professional development training?
3. What elements of learning did the participants perceive the professional development supported and developed in reasonable adjustment?

1.6 Methodology

The research conducted in this thesis examined the use of design thinking as a methodology for Professional development in reasonable adjustment for VET trainers. The study was conducted in Western Australia. It involved 12 VET trainers, who were employed by an RTO, from varying training areas. A three-hour PD session was conducted using a PD format that followed the design thinking model developed for this research. The PD session explored the use of methods and tools that could raise the trainer's understanding of and empathy for people with disability, and increase their understanding and skills in applying RA. Chapter Four describes the design thinking model, methods and tools used in more detail.

The research used a constructivist paradigm; that people actively construct knowledge and truth individually and socially from their perspective of “reality and prior knowledge (Guba & Lincoln, 1994). The PD process and format was adapted from IDEO’s Design Thinking for Educators (2012). The PD consisted of 9 steps that followed the design thinking processes framing, ideation, prototyping, implementation and reframing. The trainers participated in PD activities as an individual and in a small group of 4 people. Each group was given a different RA problem to solve as part of the PD and design thinking process. Chapter Five describes the PD session in detail.

The PD session, and pre and post PD questionnaires provided data and artifacts that allowed investigation of the ways that design thinking facilitated learning, developed empathy for people with disability and increased the skills in applying and knowledge of RA by VET trainers. Chapters Six and Seven discuss these findings in detail.

1.7 Outline of this thesis

The thesis consists of four sections:

- Section One: Background and Introduction
- Section Two: Research Context and Literature Review
 - Background to the problem; Includes understanding the changes to VET and CBT and the affects on trainers and people with disability;
 - Learning theories: Review of learning theories including adult, transformational, experiential and action learning
 - Design thinking: review of design thinking including its application in education and VET;
 - Empathy: The role of emotions in decision making, inductive, deductive and abductive inference and empathy in design.
 - Wicked problems and solutions to wicked problems;
- Section Three: Methods and process
 - Conceptual framework to this research;
 - Review of design thinking tools and methodology;
 - The methodology and process of the PD session.
- Section Four: Research findings
- Summary, discussion and conclusion relevant to the research questions, and recommendations for improvement and future research.

Chapter One is the introduction to this research. Chapter Two identifies the background, context and stakeholders to the problem. The introduction and

changes to VET and CBT including the effects that those changes had upon the trainers and people with disability. The legal changes that further support people with disability to access and participate in education was also included as it added further complexity to the problem. Chapter Two also identifies the need for attitudinal change therefore use of design thinking as a PD method required the review of learning methodologies that could support adult learning and attitudinal change.

Chapter Three reviews learning theories and explores the ways design thinking could support these learning theories. The chapter outlines the constructivist position employed by this study and includes a review of adult learning, transformational learning, experiential learning, action learning and orientations to learning.

Chapter Four introduces design thinking and the role of creativity as part of the process. The chapter introduces design thinking, addressing unmet need, the creative leap and its application in design practice, while understanding the messiness of designing solutions. Chapters Two and Three suggested that attitudinal change was important, therefore the use of inductive, deductive and abductive inference and empathy in design. Chapter Four reviews the concept of wicked problems and the methods that create "clumsy" solution that could possibly address wicked problems.

Chapter Five as an outcome of chapter Two, Three and Four outlines the conceptual framework, the design thinking tools and methods that will support PD and the design thinking model used for this research. The chapter concludes with by outlining the methods, tools and processes employed in the study as part of the PD, which includes ethical considerations.

The analysis of the data and findings are presented in Chapter Six and Seven. Chapter Six evaluates and presents the data collected from the two research questionnaires in the form of graphs, diagrams and discussion. Chapter Seven discusses the finds, data and observations during the research to answer the research questions.

Chapter Eight concludes the thesis with an overview of the researchers design thinking model, the summary of the finds and the outcome of the research. Recommendations for future research and further development of the PD concludes this chapter.

1.8 Glossary

Accredited VET course	An accredited VET (Vocational Education and Training) course is: <ul style="list-style-type: none"> • a structured sequence of training developed to meet training needs that are not addressed by existing training packages • a course accredited by the national VET regulator or by a delegated body of the national VET regulator, and • a course that has been assessed by ASQA as compliant with the <i>Standards for VET Accredited Courses 2012</i> and the Australian Qualifications Framework (AQF).
AHRC	Australian Human Rights Commission.
AQF	Australian Qualifications Framework
AQTF	Australian Quality Training Framework
ASQA	Australian Skills Quality Authority (ASQA), the national regulator for Australia's vocational education and training sector.
Competency	The consistent application of knowledge and skill to the standard of performance required in the workplace. It embodies the ability to transfer and apply skills and knowledge to new situations and environments.
Compliance audit	<p>The systematic and documented process ASQA uses to assess a provider's ongoing compliance with the VET Quality Framework and other relevant standards.</p> <p>Compliance audits are scheduled at ASQA's discretion. The cost of ASQA undertaking a compliance audit of a registered training organisation is chargeable to that provider.</p> <p>ASQA also has the authority to undertake compliance audits of providers outside of Australia.</p>
Consultation	When deciding what to include in an educational course and how to teach it, an education provider should consult with each student with a disability doing the course and consider their needs. Where possible the student and education provider should work together to find adjustments and solutions to help the student access and participate in education and training.
DEEWR	Commonwealth Department of Education, Employment and Workplace Relations.
Direct discrimination	Direct discrimination means treating a person with disability less favourably in similar circumstances than a person without disability.
DDA	Disability Discrimination Act 1992 (Commonwealth).
Disability	The definition of disability under the DDA includes physical, intellectual, psychiatric, sensory, neurological, and learning disabilities, as well as physical disfigurements, and the presence of disease-causing organisms in the body. The definition includes past, present and future disabilities as well as imputed disabilities and covers behaviour that is a symptom or manifestation of the disability.
DSE	Disability Standards for Education 2005.
Discrimination	Disability discrimination occurs when people with disability are treated less fairly than people without disability. Discrimination can be either direct or indirect.
Education provider	An education provider is an educational authority or an educational institution or an organisation whose purpose is to develop or accredit curricula or training courses used by other education providers.
Educational institution	Educational institution means a school, college, university or other institution at which education or training is provided.
Harassment	Harassment is an action that is reasonably likely to humiliate, offend, intimidate or distress a person. This could include insensitive comments, photographs, and inappropriate body language.
Indirect discrimination	Indirect discrimination occurs when a person with disability is

	expected to comply with a requirement or condition, however because of their disability does not or is not able to comply. The requirement or condition must also be likely to have the effect of disadvantaging persons with disability in a way which is not reasonable (section 6 Disability Discrimination Act).
Learner	A person being trained and/or assessed by the RTO for the purpose of issuing AQF certification documentation.
Measures for compliance	Measures an education provider may implement to meet the requirements of the Standards.
Obligations	Responsibilities of educational authorities, institutions and other education providers to ensure students with disability are treated on the same basis as students without disability.
On the same basis	The concept of 'on the same basis' is fundamental to the operation of the requirement of a provider not to discriminate against students with disability. On the same basis means that a student with disability has opportunities and choices, which are comparable with those offered to students without disability in relation to admission or enrolment in an institution; and participation in courses or programs and use of facilities and services.
Participation	Participation refers to the way a student engages with the learning activities. An education provider must take reasonable steps to ensure that the student is able to participate in the courses or programs provided by the educational institution, and use the facilities and services provided by it on the same basis as a student without disability and without experiencing discrimination.
Provider	Provider refers to teachers and staff of education and training facilities and services.
Qualification	Formal certification, issued by a relevant approved body, in recognition that a person has achieved learning outcomes or competencies relevant to identified individual, professional, industry or community needs.
Reasonable adjustment	An adjustment is a measure or action taken to assist a student with disability to participate in education and training on the same basis as other students. An adjustment is reasonable if it achieves this purpose while taking into account the student's learning needs and balancing the interests of all parties affected, including those of the student with the disability, the education provider, staff and other students.
Recognition of prior learning (RPL)	An assessment process that involves assessment of an individual's relevant prior learning (including formal, informal and non-formal learning) to determine the credit outcomes of an individual application for credit.
Registered training organisation (RTO)	An organisation, registered with ASQA in accordance with the requirements of the VET Quality Framework, to provide specific vocational education and training and/or assessment services.
Trainer	A person engaged in providing training or assessment services in Vocational Education or training, being a competent person who holds the appropriate qualifications and competency to deliver training and provide assessment of competency.
Training package	Training package means the components of a training package endorsed by the Industry and Skills Council or its delegate in accordance with the Standards for Training Packages. The endorsed components of a training package are: units of competency; assessment requirements (associated with each unit of competency); qualifications; and credit arrangements. The endorsed components form part of the requirements that an RTO must meet under these Standards. A training package also consists of a non-endorsed, quality assured companion volume/s which contains industry advice to RTOs on different aspects of implementation.
Student/ prospective student	Student means a person enrolled in an educational institution. For an educational institution, prospective student means a person who

	approaches the institution about seeking admission to, or applying for enrolment in the institution.
Unit of competency	The specification of the standards of performance required in the workplace as defined in a training package.
Unjustifiable hardship	The Disability Discrimination Act does not define 'unjustifiable hardship'. In determining whether 'unjustifiable hardship' applies, all relevant circumstances of the particular case must be taken into account, including: the nature of the benefit or detriment to all persons concerned; the disability of the person; and the financial circumstances of the provider.
User	User means people with disability, their family, carers, friends and advocates.
VET Quality Framework	The VET Quality Framework comprises: <ul style="list-style-type: none"> • the <i>Standards for Registered Training Organisations 2015</i> • the Financial Viability Risk Assessment Requirements • the Data Provision Requirements • the Fit and Proper Person Requirements, and • the Australian Qualifications Framework.
Vocational education and training (VET)	A set of standards and conditions used by ASQA to assess whether a registered training organisation meets the requirements for registration.
Victimisation	Victimisation occurs when someone has been treated unfairly for complaining or assisting others to complain about an incident of discrimination or harassment.

1.9 Abbreviations

AQF	- Australian Qualifications Framework
AQTF	- Australian Quality Training Framework
ASQA	- Australian Skills Quality Authority
CBT	- Competency Based Training
DDA	- Australian Disability Discrimination Act 1992
DSE	- Commonwealth Disability Standards for Education 2005
RPL	- recognition of prior learning
RTO	- Registered Training Organisation
TAFE	- Technical and Further Education
VET	- Vocational Education and Training

1.11 Delimitations and scope of key assumptions

The research has the following delimitations. The research does not aim to add to the research in education, VET or CBT. The review of educational theory was included to assist and inform in the design of the PD and the use of design thinking as a PD method. The end users of the research were VET trainers in Western Australia. The non-inclusion of people with disability as part of the stakeholder group was a choice based upon safety and sensitivity to the needs of participants and people with disability. The number of participants was limited and as such further research would be recommended to further explore the use of design thinking as a PD activity.

Section Two: Research Context and Literature Review

This section is broken into three chapters. Chapter Two examines the history of the VET reforms, the impact of CBT, the impact of the DDA and DSE and concludes with a summary of the barriers faced by people with disability and VET trainers. Chapter two reviews learning theories and links the theory to the objectives of the research and design thinking. Theories reviewed included adult, transformational, experiential and action learning. Chapter Four provides a review of design thinking including its application in education and VET, the role of emotions in decision making, inductive, deductive and abductive inference and empathy in design, and discusses wicked problems and solutions to wicked problems;

Chapters Two, Three and Four provide the background that interrelates and shaped this research project with a clear direction.

Chapter Two: Background to the problem – VET and CBT in context

The process of solving a problem should begin with understanding the context in which the problem exists. To try to solve a problem without that knowledge would increase the probability of an ill-fitting solution. The more complex a problem the less probability of finding a solution that is appropriate for all and by all parties. In situations of complex problems it is inevitable that by solving one problem we will create another problem; any solution to a complex problem that has been created from a single perspective is guaranteed to fail (Ney & Verweij, 2104; Rittel & Webber, 1973). Therefore it is essential to understand the context and stakeholders within the VET sector prior to developing a PD design for RA.

The agendas behind and the implementation of CBT into the Australian VET sector could be the cause of the ongoing problems associated with CBT and in particular the ability to create flexibility in training delivery and assessment. The introduction of CBT in Australia commenced in 1989 following a “policy focused debate about a more skilful (‘clever’) country” (Billet, McKavanagh, Beven, Angus, Gough, Hayes, Robertson and Seddon, 1999, p. 3). Billet et al. (1999) commented that the implementation of CBT was accompanied by the development and implementation of policies that aimed to reform workplace practices, link staff remuneration to skills levels, reform and restructure the VET sector in Australia. Billet et al. (1999) suggest that the introduction may have also been a reaction to the negative appraisals internationally, of Australia's vocational education and training performance internationally.

The introduction of CBT in Australia was seen as a solution to more than just developing a “clever” country, it was introduced as a solution to achieve wider

changes and reforms. Mulcahy and James in their review of the introduction of CBT emphasised that the key component of these reforms was a focus on being relevant and responsive to industry, increase the involvement of industry in the development and design of training and the creation of a uniform national VET sector (1999). Guthrie (2009) identified the development and implementation of CBT included the development of a nationally recognised training system containing the Australian Qualifications Framework, the Australian Quality Training Framework and the development and implementation of Industry Training Packages.

At the same time as the policy and implementation of these changes in the provision of VET and the introduction of CBT in Australia, there were fundamental changes to the rights of people with disability. The introduction of the DDA meant that people with disability now had the legal right to participate in all aspects of the community, including the access to education and training without the fear of discrimination (DDA, 1992, § 22). Further to the introduction of the DDA was the implementation in 2005 of the DSE that further clarified and specified equal access and participation in education and training for people with disability (Cumming et al, 2013). The expectation of providing equity is through the provision of "Reasonable Adjustments" (DDA, 1992, § 5; DSE, 2005, §§ 2.2, 4.2(3), 5.2(2), 6.2(2), 7.2(5)). A "Reasonable Adjustment" is a change made by an educational provider to assist a person with a disability to participate in education on an equal level as a student without a disability (DEEWR, 2012 pp. 44-46). Non-compliance with the standards is unlawful and if non-compliance is established a student has the right to make a claim of discrimination under the DDA (Cumming et al, 2013).

Ten years after the introduction of CBT Billet et al. (1999) in their review of CBT found that there was limited evidence that CBT had contributed to the development of skilful, flexible and adaptable workers. Rather they found that the changes that had occurred in the training sector to create a more flexible and adaptable workforce were more related to the trainers of the sector and their development of curriculum and training methods.

Further to this, there was a lack of awareness and understanding by RTOs of the legislative reforms that were introduced to support the inclusion of people with disability in education. This meant that these organisations were at risk of breaching the DSE and become legally liable for their actions under the DDA (DEEWR, 2012). It is interesting to note, that while these changes were introduced to support and promote access and participation of people with disability in training the number of students with a disability in training has not significantly increased (Cocks, 2013). Guthrie (2009), Misko (1999) and Billet et al (1999) identified that the perceived rigidity of CBT, compliance with audit requirements, the inability to report achievement of incremental skill levels and the overall

bureaucratic top-down approach of CBT's implementation and later reforms may have also impacted negatively, directly and indirectly on people with disability.

2.1 Understanding the VET trainers

The VET sector and system are diverse and complex. An RTO requires the expertise of delivery and non-delivery staff to be able to provide training services (Chappell, 2003). An RTO's primary objective is the training of students in industry skills and knowledge to achieve an outcome of employment or further education or training. However, as part of this service provision the RTO is required to recognise and meet the needs of multiple stakeholders. The most important of these stakeholders is The Australian Skills Quality Authority (AQSA), the auditing body responsible for assessing their compliance with the VET Quality Framework. Non-compliance would mean that the RTO would not be able to provide training services; therefore being audit compliant is paramount to the ongoing operation of an RTO (Asqa.gov.au, 2015).

The delivery of training and assessment services to students is the function of an RTO and is the responsibility and primary role of VET trainers. The VET trainers are key to service delivery because they are often the primary person working with learners. As such their ability to provide a service that is compliant with the VET Quality Framework and the Standards for Registered Training Organisations is essential; including adherence to all relevant regulations and legal compliances. This places the trainers in a highly influential, valuable and venerable position. They have a major influence on the quality and delivery of training to students.

2.2 Sacrificing an innovative culture for a compliance culture

Misko defined CBT as "the specification of knowledge and skill and the application of that knowledge and skill to the standard of performance expected in the workplace" (1999, p. 1). CBT is a relationship between training and the workplace, meaning that the design of training and assessment should give consideration to student's work role and workplace. (Toohey et al., 1995). The concept of assessment is elaborated by Guthrie (2009) who argues that the assessment of competence is subjective because it relies heavily upon the personal experience of the trainer, the occupation and workplace that it would need to be assessed within and against. Hager (19 Hartshorne and Weiss (1998/93) as cited in Guthrie (2009) notes this subjectivity as "Judging competence always involves inference and, therefore, professional judgements"(p.29). The different needs of workplaces is the reason why flexibility needs to be embedded into training, assessment and recognised in the audit process.

The audit system involved trainers being subjected to scrutiny of their assessment by an auditor. Guthrie (2009) implies that the auditors are "powerful and potent influencers" (p.27) within the system. However, if the auditor is inadequately trained and does not fully understand the system, process, training, assessment or workplace context, they can be "conveyors of the wrong information" (p.27). The primary role of the VET trainer is delivery and assessment however this role is precarious and restrictive in this context of compliance and standardisation. It is important to understand that the trainers who operate within the VET sector are subject to influences of multiple stakeholders who have priorities that can be in conflict with each other. These conflicting priorities create a complex working environment and mean that the trainers are required to make choices of what priorities are the most urgent in regards to their own employment, job duties and compliance with regulatory standards.

It is suggested in the literature that there is confusion, conflict and contradictions in what is considered quality training delivery and assessment and how quality could be audited (Guthrie, 2009; Thomson, 2001; Toohey et al., 1995). Guthrie's (2009) review identified that the process, procedure and documentation of assessment in training has been the focus of auditors when assessing compliance with standards. Even though there is little evidence that there is consensus on what the standards are, because "CBT assessment strategies continue to be disputed" (Guthrie, 2009, p.26). "In the battle between compliance and innovation, many providers feel compliance wins" (Guthrie, 2009, p.17). Therefore there is little incentive within the system for trainers to be creative, innovative or to take a risk, as the consequences could be far greater than the perceived gains.

In the VET environment the validity of assessment is often the responsibility of a small team or in some cases an individual trainer. For those involved in the design and assessment of competency in skills and knowledge that included work practices that have associated risks, such as an Occupational Health and Safety assessment, could leave them in a vulnerable or legally liable position. Thomson et al. (2001) recommended that the audit process be enhanced to enable improved scrutiny of assessment processes; in response to the risks associated with assessment. This recommendation and audit focus upon assessment could have indirectly shifted the focus of providers away from learner-centred delivery. The result is a focus by RTOs and trainers on audit compliance, rather than innovative delivery and assessment. This would restrict the trainer's capacity to adapt and change their delivery and assessment processes for the learner. Instead there is a reliance upon standardisation by RTOs and trainers as a way of reducing risk.

VET needs to become learner-focused not just in its delivery, but also in the conceptualisation of training and practices that support the development of self-directed and independent learners. This is a change in role and practice for VET trainers, who traditionally train and assess skills and knowledge related to work competencies. Trainers would have to develop and conceptualise new strategies

to be able to teach trainees how to become independent learners. This would mean having to challenge the standardised approaches to delivery and assessment (Chappell's, 2003; Guthrie's, 2009).

The assessment of competent or not yet competent performance that exists within CBT, means there is no grading of performance and no recognition of partial completion or partly competent. This has been highlighted as a major issue for both students and industry. Non-graded passes are seen by students, especially the high performing students, as being demotivating by removing the incentive to excel as there is no recognition, indication or reference to levels of achievement. Employers place value on knowing performance levels as this assists them to identify and potentially reward high performing individuals. However CBT does not indicate levels of performance or achievement (Billet et al., 1999). The competent or not yet competent element of CBT reduces the VET trainer's options of promoting or identifying performance that demonstrates excellence. This inability to set levels of performance beyond competent or not yet competent could also contribute to the ongoing debate of what is appropriate assessment (Guthrie, 2009).

This focus on compliance leaves no room for flexibility for the trainers to develop innovative training solutions. The cultural context and focus is to be compliant not innovative. If the focus was shifted from assessment back to delivery and assessment having equal importance then there could be new flexibility with VET. The conceived rigidity of the system, such as having to state to trainees when they are being assessed and when they are not, does not mitigate the possibility of the trainee always being assessed. Instead the design of delivery could include assessment, the two processes do not have to be separate; this is supported by the concept of building competency over a period of time rather than in a one-off or restricted timeframe. This type of delivery and assessment would mean that assessment could be contextualised for trainees to their workplace and work role.

2.3 Trainers need access to resources and workplaces

Watson (1993), Reynolds and Barnett (1993) and Toohey et al. (1993) identified that the assessment of competency should be a process that includes observation over a period of time, should not be restricted solely to the educational setting and be based on actual skills within the workplace. This was further supported by Billet et al (1999) observations that training delivery and assessment needed a shift in focus to being relevant to the student's workplace and work role. This was confirmed by trainees who reported that there were differences in the task or how a task was performed in the training environment versus the workplace; this included the equipment being used. This observation further complicates the role of the VET trainer as their ability to design and deliver

relevant training and assessment is highly dependent upon their access to current resources, facilities, equipment, access to workplaces and having the opportunity and time to keep up to date with current workplace skills, knowledge and practices.

The VET sector will continue to undergo changes. This is inevitable and goes hand in hand with the continued changes occurring in industry and technology. The skills and knowledge required for the types of jobs available in the future (Chappell, 2003). Therefore there is a need to “redesign strategies, systems, structures and mind sets [sic] that currently work against the adoption by VET professionals of new ideas and new ways of working” (Guthrie, 2009). A summary of the impacts of the VET reforms and introduction of CBT upon on VET Trainers discussed in this chapter are outlined in Figure 2.1. The PD needs to support the trainers in their role and provide skills and knowledge that makes it easier for them to meet the needs of the stakeholders with out placing greater demands upon them.

The impact of the VET reforms and introduction of CBT on Vet Trainers
<p>Vet Trainers are;</p> <ul style="list-style-type: none"> • Operating in a complex environment • Required to meet the needs of multiple stakeholders • Subject to audits assessing RTO compliance with the VET quality framework • Responsible for design and delivery of training and assessment • Subject to scrutiny of their professional skills • Perceive CBT as restrictive reducing their ability to be innovative and creative • Being challenged to develop flexible, adaptable and independent learners • Required to keep their skills, knowledge and work practices up to date • Adapt to the changes in resources, equipment and practices in industry • Required to maintain industry skills and knowledge, and work practices • Required to maintain professional training and assessment qualifications.

Figure 2.1: The effects of VET reforms and introduction of CBT on VET Trainers

2.4 Effect of VET changes and CBT on people with disability

The requirements of the DDA and DSE underpin the rights of people with disability accessing training and should be referred to when making or not making reasonable adjustments for students with a disability. The DSE emphasises the

necessity to provide training to students with a disability on the “same basis” to student without disability. The DDA and DSE stipulate that training providers should work with students with disability, their support people and employers when designing and making reasonable adjustments. However, training providers do not have to provide reasonable adjustments if it causes an unjustifiable hardship (DSE, 2005; DDA, 1992). However, training providers must have first tried to make a reasonable adjustment before they use the defence of unjustifiable hardship as the reason for not making a reasonable adjustment. The stated unjustifiable hardship by the training provider should be supported by evidence, rather than on assumptions about the capacity of a person or their disability. Evidence would be provided through the process of investigating, designing or trying to apply a reasonable adjustment with the student (DSE, 2005; DDA, 1992; Cumming, Dickson & Webster, 2013).

The number of students with disability in VET is considerably less than students without disability. This could be a contributing factor to the lack of skills and knowledge within VET in providing assistance and reasonable adjustment to these students; being the least proportionally represented equity group (Cocks & Thoresen, 2013). Even though students with disability represent a significantly small student group in VET these students are twice as likely to face barriers in VET. These barriers include, lack of support within and externally to the system, literacy and numeracy issues, difficulties with the built environment, lack of assistive technology and communication barriers (Cocks & Thoresen, 2013). The non-completion rates for students aged 15-24 with disability were six times the rate of students without disability (13% and 2% respectively) (Abs.gov.au, 2011). The non-completion rate and low participation levels illustrate further the need for students with disability to be provided with support to overcome the barriers they experience in VET. The importance of completing a qualification for a person with a disability cannot be overstated. A qualification assists them to obtain and maintain employment to nearly equal levels as a person without disability (77% and 86% respectively). The higher the level of qualification the more likely they are to obtain employment (Abs.gov.au, 2011). Addressing the barriers in VET should not been seen as just a way of obtaining a qualification, but should be recognised as one of the opportunities that will increase people with disability's valued role, economic contribution and social participation in the community.

2.5 Provision of support in training is one of the keys to success

Cocks and Thoreson's (2013) research revealed that 10% of trainees with a disability self-disclosed some form of harassment or bullying during training and on the job. This is significant, as the study did not directly ask if they had been harassed or bullied, the information had been volunteered. Harassment and bullying was a significant contributor to the attrition of trainees with a disability. Other factors included lack of support from lecturers and tutors and poor

coordination of support for trainees between Disability Employment Services and Group Training Organisations (GTO). Conversely, the most important factor that contributed to course completion and a major facilitator to success for students with disability was support. Support included access to tutoring, supportive and understanding individuals or agencies that were willing to provide individualised and tailored support; this included emotional and practical support. The research by Cocks & Thoresen (2013) found that 70% of trainees attributed their own motivations and perseverance, prior positive experiences and support from others as a major contributor to success. The provision of support is a significant contributor to a positive outcome in VET for students with disability. Trainers could provide support and feedback during and outside of class times in a one to one or small group environment. However, this would require the trainers to have available time, empathy for and the skills and knowledge to be able to support students with a disability. Furthermore, the RTO would need to have a learner-focused service provision and have allocated time and resources towards the activity of supporting students.

2.6 Positive Attitudes towards students with a disability makes a difference

Reducing the barriers for people with disability in VET using reasonable adjustments is often considered as having to change delivery and assessment tools or strategies, using technology or modifying the environment. These are all valid forms of adjustment. However, as identified by Cocks and Thoresen (2013) the provision of support was a major attributor to success; the primary sources of support being people. As discussed earlier, VET provides services to people by people. Ignoring this fundamental context means we ignore the influence of people and their behaviours and attitudes within the system. As expressed by O'Connor (1993) reasonable adjustment is not just changes to the environment or training and assessment practices, but should include a change in attitude. Thompson, Fisher, Purcal, Deeming and Sawrikar (2012) *Community Attitudes to People with Disability: Scoping Project*, "found that negative attitudes" towards people with disability and a limited knowledge or training about disability was one of the factors that makes it difficult for people with disability to access services. The scoping project revealed, "that negative attitudes, along with these misconceptions and lack of awareness presented barriers to social inclusion in various life domains such as education" for people with disability. Having knowledge about disability is important, as is having experience and familiarity with people with disability. Both of these together allow others to see beyond a definition or diagnosis rather they see the person first and the disability second. One way of changing negative attitudes about people with disability would be to enable people without a disability to see the situation from the perspective of the person with a disability to develop and have empathy for the person and their situation. Having a positive attitude towards people with disability changes the way that we relate to and support them, and helps to

minimise our fears and biases. A positive attitude increases the likelihood that their differences will be accommodated because they see a person with abilities; not just the disability (Thompson et al., 2012). This may be harder to achieve than it seems. While students with disability remain underrepresented in VET there is less likelihood of a trainer having experience or familiarity with students with disability, which is a key element to building positive attitudes toward people with a disability.

2.7 Not all disabilities are disabling all the time

Designing training delivery and assessments, and assessing the competency of people with disability needs to consider when adjustments might be required, what adjustments are needed or is there even the need for adjustments in the first place (Reynolds and Barnett, 1993). It would also need to differentiate between what are the “inherent requirements of the particular work” (DDA, 1992), which would be specified in the curriculum as mandatory components (core units) of training versus what would be considered to be elective components; elective units allow flexibility and adaptability in qualification design (Training.gov.au, 2015). This is a process that would need to include the person with the disability, their support people and the trainer. Trying to create reasonable adjustments without inclusion of the person with the disability or their supporters negates the expertise that they have and their understanding of barriers they identify in VET. Equally including the trainer or multiple trainers in developing reasonable adjustments is essential because of their expertise and intimate understanding of the training and assessment requirements. The other people that can contribute and should be included in the development of adjustments are employers, disability support services, administrative supports, potential tutors and direct carers or advocates. The most important factor is that the trainer should not feel that the responsibility for designing reasonable adjustment is solely theirs. Rather, it should be a process of co-creation and in some cases, experimentation. The focus should be to enable full participation, create the best possible outcome for the person with a disability and has validity to work performance and practices (DSE, 2005; Reynolds & Barnett, 1993). Therefore this would require the trainer to have the necessary skills and knowledge, and a process to work with others to develop RA solutions.

2.8 Focusing on delivery first and assessment second

The fundamental concept behind CBT is that a person can develop their skills and demonstrate their competency over a period over time; there is no specification of timeframe for this development. Toohey et al. (1993) assert that competency would rarely be achieved in the time constraints or time restrictions of a

vocational education and training program. Competency could be achieved quickly or slowly dependent upon the individual. The assessment competency of a skill is not meant to be assessed singularly or in isolation from the trainee's other skills and knowledge. Assessment design and delivery should ensure the competency is assessed holistically and ideally within the context or the environment that the skill will be performed, like a workplace (Toohey et al., 1995). This is important as it enables contextualisation, transferability and demonstration of knowledge and skills by the trainee; applicable to the workplace and work role. Cocks (2013) found that the "place then train" model helps students with a disability because there is less need for them to transfer learning from the training environment to the workplace. Rather, the skills and knowledge are learnt in context.

Funded training programs bring the restrictions of time and funding requirements, which further complicates the delivery of CBT. There is a heavy focus upon assessment because this is a key performance measurement and payment criteria; the higher the pass rate the "better" the training. This however negates the recognition of skills and knowledge development, which have not yet met the standards of a pass grade. Reynolds and Barnett (1993) advocate for the introduction and recognition of partial competency or increments of competency and this should be applied to assessment on-the-job, in the training environment and during the process of Recognition of Prior Learning (RPL). Reynolds and Barnett (1993) asserted, that without being able to have part completion or modified levels of completion people with disability would not be able to obtain recognition of skills or knowledge that they have gained while attending training. This change in assessment could assist to ascertain what skills and knowledge a person had gained at any point in the training process and it could also assist to identify when a skill or knowledge element required adjustment to allow the student to demonstrate competency. This in turn could allow for competency to be granted with the provisions of support; for example, a person is competent at driving a modified vehicle but not an unmodified vehicle.

This change to assessment could meet the needs of students with and without disability and assist employers to identify high performing trainees and identify the skills and knowledge development of a trainee throughout the training process, not just at the end of each delivery and assessment cycle which is traditionally undertaken in terms, weeks or single unit delivery. It could create greater flexibility and innovation in training delivery, which could see students attending training in small chunks to gain skills and knowledge.

With institutional based funding, delivery and assessment comes institutionalised thinking and doing. If thinking about delivery and assessment is taken out of the institutional environment, more flexible and innovative ways of being able to

demonstrate and record competency may be created. The constant development of technology and the increasing accessibility of technology like smart phones could create a paradigm shift in the way that trainers deliver and assess within VET. To be able to achieve this RTOs need to become more creative and innovative in delivery and assessment, develop new and approved ways of assessing that meets audit requirements and engage those with the primary responsibility for delivery and assessment; the trainers.

2.9 Person First

In my experience the attitudinal barriers of VET providers and practitioners are more restrictive than addressing the practicality of making a reasonable adjustment. The most common rejection of reasonable adjustment I hear is that trainers do not want to “dumb down” the course or the assessment of competence. This type of response and attitude pays little recognition to the concept of universal design and the consequential benefits that reasonable adjustment can have for the wider student group. Other fundamental issues with the implementation of reasonable adjustments are the assumptions and biases that trainers have about people with disability. The underlying assumption that a person with a disability is of lower intelligences or needs the delivery or the assessment to be made easier is incorrect within the context of reasonable adjustment.

The use of the term “person with disability” can create the assumption that the person is disabled—which in itself can be a contentious issue—and that the disability effects them all of the time, in all aspects of their life. The reality is that the person may have a disability that is always present, however, how that disability affects their life is more dependant upon the context they are in or attitudes towards the person rather than the disability itself (Thompson et al., 2012). Reynolds and Barnett (1993), Connor (1993), and Cocks and Thoresen (2013) agree that there are multiple factors that need to be considered before determining if a person's disability is disabling when engaged in training. For example, a person with a physical disability provided with the appropriate adjustments and supports could find that their disability has no impact upon a their capacity within a training or employment environment. Conversely the same person could have a talent or skill that is extraordinary, like a musical talent. This is when the term “person with disability” is rarely used to describe them; for example, Jeff Healey a world-renowned blues guitarist and singer who is blind (Healey, 2015).

Support Type	Examples

Informal	Family, carers, advocates, friends, neighbours, co-workers, employers and other students
Formal	Service providers; Disability support agencies, employment agencies, schools, RTOs, GTOs, universities, support workers, interpreters and Advocates Clinical and complementary support; Physiotherapist, occupational Therapist, speech pathologist, social workers, counsellors and psychologists Medical support; Doctors, specialists and medications Education and training supports; Tutors, lecturers, administrative supports, disability Support staff, scribes, personal assistance staff
Physical	Equipment: Wheelchairs, splints, glasses, hearing aids, audio and video recorders, grab rails, chairs, touch pads, communication devices and computers Modified equipment: Safety barriers, modified vehicles, adaptations to assist with ease of use like, one handed keyboard, electric start, trolleys, hoists, mechanical lifters and colour coding Environmental: ramps, reduce counter heights, taps, switches, electric door openers, electronic locks, accessible bathrooms and toilets and signs
Adaptions	Increased time, modified formats for textbooks and instructional material; video, large text, digital, picture, symbols, colour coded, audio loops, video captions, accessible websites, information in accessible locations, text to speech equipment, verbal question, scribes, literacy and numeracy support, breaks, modified work role, adaptations to curriculum, changes to assessment and delivery, individual work versus group work, one on one versus group/public presentations and written versus verbal presentations.

Figure 2.2: Support types and examples supports.

Two people with the same disability can have significantly different support needs. Figure 2.2 illustrates how support can be provided informally, formally, physically or as an adaption. The support provided is designed to reduce the impact or presence of the disability within the training or employment environment. Providing support to a person with disability does not provide an advantage rather it allows the person to participate equally and fully in training and employment.

Lastly and most importantly is the concept of “person first”. There are two components to this concept. Firstly, the student is a person first and should be given the same rights, responsibilities, opportunities and supports as other students. Secondly, the effects of a person's disability will be highly individualised and not solely related to the disability. As discussed by Cocks and Thoresen (2013) support is one of the most important elements to successful outcomes in training. Support is also important in all areas of a person's life. The more support the person has the more they will be able to participate in life and demonstrate their abilities.

The impacts of VET and the introduction of CBT and the DDA and DSE discussed in this chapter are summarised in Figure 2.3.

The impact of the VET reforms and introduction of CBT on People with disability
People with disability are;
• People first who have abilities, talents and skills
• Protected from discrimination in VET by the DSE and DAA
• Under represented in VET as a student group
• In need of support during training; in particular from Trainers
• Subject to negative attitudes and assumptions about people with disability
• Not always disabled by their disability in training
• Required to self disclose and provide proof of their disability
• Contextual learners and benefit from the "place then train" model
• Disadvantaged by the pass fail assessment system of CBT
• Able to learn and develop skills and knowledge incrementally
• Successful in training and in the workplace with appropriate adjustments
• In need to of innovative, flexible and adaptable assessment and training

Figure 2.3: The impact of the VET reforms and introduction of CBT on people with disability

2.3 Summary

The literature review has revealed that there are barriers affecting the participation of students with disability in VET. These barriers exist as part of the overall VET system as well as being evident in the delivery of training and assessment for students with disability. The literature shows that these barriers are not new and are a reoccurring theme within the literature. The barriers identified in the literature are systemic and complex in nature. The complexity of the barriers means that there is not a simple or single solution. In the process of resolving the barriers for people with disability the solutions may cause new problems or involve having to solve other problems. Guthrie (2009), Misko (1999) and Billet et al (1999) draw attention to the need for the VET sector to be more strategic and student-focused by involving the trainers in the development and implementation of future changes to CBT and VET. Guthrie's (2009) observed that trainers had become responsible for the design and delivery of training and assessment in VET without being given adequate resourcing or training to develop the skills required for such a role in a dynamically shifting context. Cocks and Thoresen's (2013) research concluded that the major factor for success for students with disability in VET was support. This support would need to come from the trainers directly involved with the students with disability, which further raises the issue of skills development and resources for the trainers.

Collectively, the literature outlines the complex relationships between CBT, VET, DDA and DSE which brings us back to the “problem” itself, “How do we remove the barriers within VET experienced by people with disability?”. To reduce the barriers for people with disability in VET the DDA and DSE specify the concept of on the “same basis” and the provision of “reasonable adjustments”. The authority or ability to influence and change the provision, design and delivery of training and reducing the barriers within VET is not the role of a single person or organisation. It is the responsibility of multiple stakeholders; RTOs, Trainers, Support organisations, employers, curriculum designers, industry and Government. Placing this need within a complex environment with a history of reforms and which is constantly changing and requiring on-going adaptation to the needs of industry, technology, workplaces, work roles and community, creates a context where the stakeholders are part of the problem and their capacity to solve the problem is limited. This problem is not just restricted to VET. VET could be a reflection of the larger community issues and barriers faced by people with disability in accessing, participating and contributing to the community.

Chapter Three: Learning Theories

3.1 Professional development

My research concerns developing a PD program that applies design thinking as the means to help participants to understand reasonable adjustments in VET training. It is therefore important to review and understand the context of educational theory, in particular the understanding of how adults learn, how learning is linked to personal transformation and how design thinking can be conceptualised as a learning activity. This section will first discuss the constructivist view of the research. Second, adult learning is examined through the constructivist view and the educational theories that discuss individual transformation. Third, a comparison is drawn between design thinking and transformational learning.

It is necessary at this point to clarify the definition of professional development, design thinking and wicked problems within the study. The Oxford Dictionary defines professional development as “the development of competence or expertise in one's profession; the process of acquiring the skills needed to improve performance in a job” (Oed.com, 2015). This definition will be adopted with clarification that it refers to adult learners, focused on developing the skills and knowledge of a VET Trainer. This definition takes into account that professional development is often delivered within or on behalf of an organisation, and should have a direct relationship with the employee's job role and the organisational goals and objectives.

This study recognises that there are multiple models of design thinking. Chapter Five reviews 15 models of design thinking which consisted of varied number of and names for phases. However the review identified that there were significant overlaps in the phases, allowing the phases to be grouped for the purpose of the research into either a framing, ideation, prototyping, implementation or reframing phase (see Figure 5.5). These five phases represent the foundation of the design thinking model develop for this research. The majority of the design thinking models reviewed were illustrated as being a linear processes. The linear nature of these models creates a perception that design thinking is a simple process of progressing through the phases in order. However design thinking is not a linear or a simple ordered process. Therefore design thinking is envisaged as cyclic process, not necessarily in a defined order and uses the phases in cycles that are overlapping and intertwined (Beckman & Barry, 2007). Further to this the different design thinking models use a wide variety of methods or tools. Chapter Five identifies 310 tools or methods used across seven different design thinking models (see Figure 5.7). Therefore design thinking is defined within this study as “an inventive process, through which problems are identified, solutions proposed and

produced, and the results evaluated" (Norman, 2000, p. 96). Essential to this process is the "creativity, cunning, reflexivity and improvisation skills of those involved, as well as the informal, unspoken rules that influence the proceedings" (Ney & Verweij, 2014, p. 12). This definition recognises that design thinking is more than a set of steps, phases, tools or methods or a "single expert" process or a process of hierarchy (Owen, 2007). The study accepts Brown's (2009) idea of a design thinker as "T-shaped" person with breadth of skills and knowledge who, as described by Owen (2007), has an "affinity for teamwork" and the skills of a generalist "who can reach across disciplines" (pp. 24-25). Design thinking is not a "single expert" process or a process of hierarchy rather it is a team approach where individuals contribute and participate providing expertise in a coordinated effort (Owen, 2007). Further to this design thinking could be a method that can generate innovative and creative adjustments that embraces the challenges and complexities of the business environment and the wicked problems facing society in the 21st century (Leavy, 2011; Kimbell, 2011; Martin, 2009; Ney and Verweij, 2014).

Academia, industry and Government bodies have acknowledged the concept of wicked problems and their existence in society (Rittel & Webber, 1973; Buchanan, 1992; Martin, 2009; APSC, 2007). Rittel and Webber (1973) and Crouch & Pearce (2012) suggest that there are tame problems and wicked problems. The difference between a tame problem and wicked problem is a tame problem is more likely to have a positive outcome when a solution is proposed. In contrast a wicked problem is resistant to any kind of solution. A wicked problem is not defined as wicked because it is "evil" but more so that it is cyclic or tricky to solve. This study accepts the characteristics of wicked problems, as identified by Australian Public Service Commission (APSC). Therefore a wicked problem is difficulty to clearly define, multi-causal, unstable, socially complex, the responsibility of more than one organisation and can be the result of chronic policy failure. This includes the APSC observation that there is no obvious solution to a wicked problem and any attempt to address or resolve a wicked problem often leads to unforeseen consequences. Furthermore wicked problems are considered to be cyclic in nature because attempts to address the problem can result in unforeseen consequence which can create new or reveal previously unknown problems thus the cyclic nature of wicked problems (Rittel & Webber, 1973; APSC, 2007).

The review of the Educational Standards by DWEER (2012) highlighted that there is a relevant and urgent need for RTOs to provide professional development in the area of reasonable adjustment. The above chapters discussed how the PD in RA should facilitate a change in adverse attitudes or beliefs; this needs to be achieved as part of the PD design. The research assumes a constructivist paradigm; that a person constructs knowledge and truth individually and socially from their perception of "reality" and prior knowledge (Guba & Lincoln, 1994). This reality and knowledge will be referred to as a person's own frame of reference,

defined as "something (such as an idea or a theory) that is formed in" a person's mind which includes their point of view and habits of mind (Merriam-webster.com, 2015); Merriam, Caffarella, & Baumgartner, 2007, pp. 130-137).

The constructivist concept of learning includes the individual and social construction of knowledge (Cappell, 2003; Cunningham & Duffy, 1996; Merriam et al., 2007), which results in a change in the learner that allows the learner to be able to change his or her own world (Chappell, 2003). Noweski et al. whose research Transforming Constructivist Learning Theory into Action confirmed design thinking to be a successful tool and a team-based learning process for teachers to apply constructivist theory into the classroom setting (2012, p. 8). In design thinking the participants who are valued for their individual contribution are equally involved as part of a team (social) in a process of framing the problem, ideating, prototyping and implementing the solution (Stickdorn & Schneider, 2011). The process of design thinking supports the construction of knowledge individually and socially, which could contribute to a transformation of individual participants. The instructor's role in learning, according to constructivist theory, is to "facilitate and negotiate meaning making with the learner" (Cunningham & Duffy, 1996; Merriam et al., 2007). The facilitator's role in design thinking is to facilitate the process, provide guidance, give clarity when required and to keep the process moving.

The objective of the PD is to provide the trainers with new knowledge and skills to be able to implement RA in their work role and the training environment. However as O'Connor (1993) emphasises reasonable adjustment is not just changes to the environment or training and assessment practices, but should include a change in attitude. Thompson et al. (2012) *Community Attitudes to People with Disability: Scoping Project* " found that negative attitudes" towards people with disability "among both teachers and student peers constitute a barrier to inclusive" education. Further to this it was identified that limited knowledge or training about disability made it difficult for people with disability to access services. This lack of knowledge and experience lead to these attitudes being formed from myths about people with disability commonly held within the community; these myths perpetuate negative attitudes towards people with disability (Thompson et al., 2012). The scoping project clearly revealed, "that negative attitudes, along with misconceptions and lack of awareness, present barriers to social inclusion in various life domains such as education" (Thompson et al., 2012). The PD will provide the participants with an understanding of RA, how to apply RA, and could provide an opportunity to address and ideally transform adverse attitudes or beliefs (Clapper, 2010). Papastamatis & Panitsides (2014) propose that adult education and learning is "inherently intertwined with change, change in knowledge, understanding, attitudes, beliefs, skills and/or behaviors (sic)" (p. 74). However the challenging and transformation of attitudes and beliefs is not considered a simple process; as Taylor (2007) gives advice to those who "embark on the journey of fostering transformative learning... do so responsibly and with

your eyes wide open" (p. 24). Heeding the advice of Taylor a review of learning focusing on adult learners and the process of transformation would precede the PD design and delivery.

3.2 Adult learning

The theory of andragogy, adult learning, was first proposed to be separate to Pedagogy, child learning, in the late 1960's by Malcolm Knowles (Merriam et al, 2007, p. 84). Knowles proposed that adults learn in a different way to children because they have existing knowledge and experiences, which will influence the way they learn, what they want to learn, and their motivation for engaging in learning.

The andragogical model is a system of elements that can be adopted or adapted in whole or in part. It is not an ideology that must be applied totally and without modification. In fact, an essential feature of andragogy is flexibility (Knowles, Holton, & Swanson, 2005, p. 146).

Incorporating andragogy principles into the design of the PD links the design thinking process to the needs of the learner and the organisational needs. Using the principles of andragogy does not restrict the design thinking process, rather, it allows the process to be a learning and problem solving activity; the problem focus further supports the principles of andragogy. The andragogy model (Figure 3.1) illustrates how the elements of andragogy work together and how it supports the definition of PD discussed previously; the Goals and Purposes for Learning recognises the needs of the organisation and the learner, the Individual and Situational Differences allows for the individual participants frames of references to be observed and the six core Adult Learning Principles, elaborated in Figure 3.2, will assist in the selection of the methods, tools and the content for the PD session (Knowles et al., 2005).

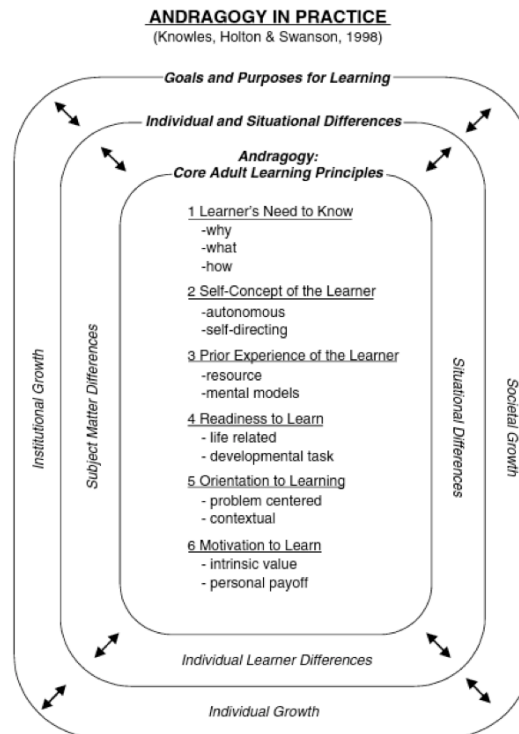


Figure 3.1: Andragogy in practice model (Knowles et al., 2005, p. 149)

Principle	Understanding
Learners need to know	There are three dimensions of knowing; the need to know how they will learn, what they will learn and why is it important to them.
Self concept of the learner	There are two dimensions to concept; Autonomous means having the ability to take control of the goals and purpose of learning, while having the ability of self-directing such being able to self train. This highly dependant on the individuals concept of "locus of control" being either seeking independence or seeking more direction (Knowles, Holton & Swanson, 2014).
Prior experience of the learner	There are two dimensions to experience: Experience services and resource for the adult leaner and creates mental modes or frames of reference.
Readiness to learn	There are two dimensions to readiness; is the learning related and relevant to their life, developmental and they be ready to learn when they are in need of the new skill or knowledge.
Orientation to learning	There are two dimensions to orientations; learning is problem solving orientated, learning is most successful when it is a real life problem that exists in the leaner's context.
Motivation to learn	There are two dimensions to motivation; The learning must have value to the learner by solving a problem or creating an advantage that will have internal or external reward or personal payoff.

Figure 3.2: The six principles of Adult learning adapted from Knowles et al. (2014)

Adult Learning Principle One, "learners need to know", includes the premise of the need to know how they will learn, what they will learn and why is it important to them. Understanding the expectations and desires of the learner through needs

assessment and mutual planning can influence the commitment and motivation of the learner to training. This type of assessment and planning could be completed before the start of a training session by asking and understanding who the learners are, what do they expect learn, how they would like to apply that learning and what do they already know. Adult learners who are given clear information about the training and what they will learn prior to attending, and have the opportunity to choose to attend training have a greater motivation to learn and learn more. Learners relate importance of learning by linking the training to work utility and future positive life outcomes. The PD session could include the opportunity to discuss learner's expectations at the beginning and review these at the end to identify achievement, providing clear pre-training information and the choice to attend, giving examples of how the training can link to work utility and positive outcomes for trainers and students.

Stage	Student	Teacher	Examples
Stage 1	Dependent	Authority, coach	Coaching with immediate feedback, drill. Informational lecture. Overcoming deficiencies and resistance.
Stage 2	Interested	Motivator, guide	Inspiring lecture plus guided discussion. Goal-setting and learning strategies.
Stage 3	Involved	Facilitator	Discussion facilitated by teacher who participates as equal. Seminar. Group projects.
Stage 4	Self-directed	Consultant, delegator	Internship, dissertation, individual work or self-directed study group.

Figure 3.3: Grows stages of learning Autonomy (Knowles et al., 2014, p. 185).

Adult Learning Principle Two, "Self concept of the learner", includes the premise of self-directed learning and autonomy as described by Grow (Figure 3.3) and shows that learners may require different types of learning guidance which ranges from dependant through to self-directed. Therefore, the learner's stage of autonomy and required training style in PD may vary dependent upon how they perceive their own expertise in the subject and their current locus of control in training. It is important to recognise that learning at the dependant stage will require guidance and feedback versus the learner at the self-directed stage who may become frustrated in a controlled environment. Learners in between may require a motivation and facilitation. This will mean that the design of the PD resources will need to give learners detailed instruction and support information for dependent learners as well opportunities for those more skilled and knowledgeable to commence activities without the need of supporting of materials (Knowles et al., 2014).

Adult Learning Principle Three, "Prior experience of the learning", includes the premise that experience will create differences amongst learners, provide a resource for learning, provides the foundations of the adult's identity and creates the frame of reference used by the learner that can inhibit or define new learning. There are a number of theories and views on what it takes to create new learning that do not agree with existing frames of reference:

- Argyris considers that learning is a process of loops. Learning that fits prior frames of reference require a single loop. Whereas learning that does not fit current frames of reference will require a double loop. In loop one there needs to be a change in the frames of reference then in loop two new learning can occur.
- Schon considers "knowing in action" as almost automatic and allows for day to day functionality based on current frames of references, whereas "reflection in action" is reflecting on frames of reference while doing to see if they are still relevant and require changing.
- Cognitive psychology offers schema theory, information process and memory research. Each of these differ, however, all premise prior experience and knowledge as existing needs to be recognised, requires testing and requires a change in the frame of references to allow for new learning to occur.
- Constructivism considers learning and context to be interdependent and that learning is a cumulative process built on prior knowledge and experiences, proposing a problem-solving approach to challenge and change existing frames of reference to accommodate new learning.

Most importantly the learner's prior experience, frames of reference, their existing beliefs and perspective can inhibit or enable new learning. Therefore it is important to build opportunities to challenge existing frames of reference through problem solving, examples incorporating new perspective and beliefs, while giving the learner time to reflect, consider and potentially change their current frame of reference to allow new learning (Knowles et al., 2014). The process and theory of transforming learners' frames of reference will be discussed further in the chapter on Transformational Learning.

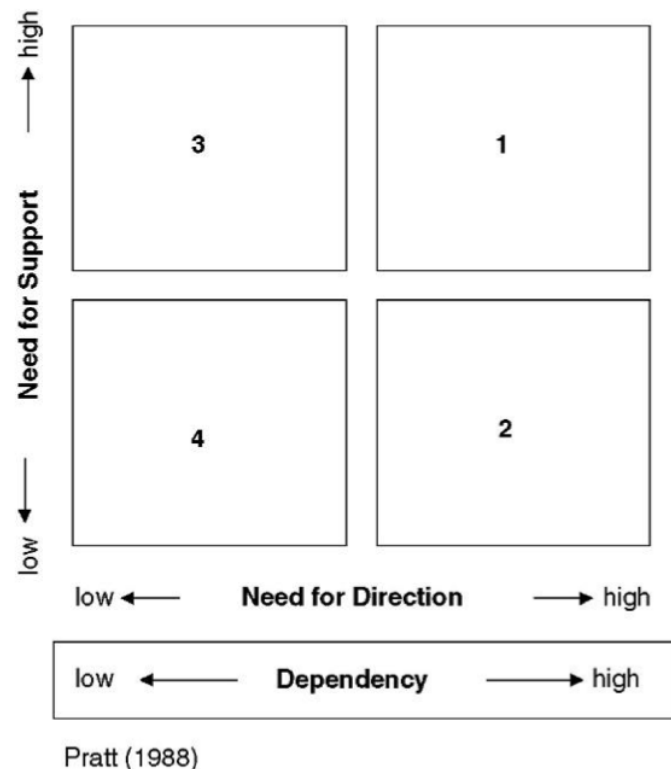


Figure 3.4: Pratt's model of high and low direction and support (Knowles et al., 2014, p. 194).

Adult Learning Principle Four, "Readiness to learn", includes the premise that the readiness to learn is dependent upon the learner's life situation and that needing to know the new skill or knowledge is an inherent part of their life. Pratt proposed a model (Figure 3.4) that mapped a learner's need for direction, support and dependence into quadrants allowing facilitators to understand what different learners would require during learning. Learners in quadrant one need high support and direction, learners in quadrant two need little support but some direction, in quadrant three they require support but little direction and quadrant four is the ideal adult learner; requiring low support little direction. Pratt acknowledges that learners may move through the quadrants during training and the quadrant is dependent upon their existing skills, knowledge and confidence in the context of the learning. The important element in the design of the PD is having points that allow for identifying where learners are at the beginning of the training; asking if they have prior experience.

Caution is given to the over-reliance on or assumption of the ability of adult learners in being self-supportive and directive, rather erring on the side of giving support and direction. The ability to be self-supportive and directive requires the development of skills and knowledge, and is linked to the learner's own locus of control (Norman, 1999). In the context of my research and exploration, the facilitator needs to be aware and attentive to the learner's shifting need for support or direction during the PD, recognise the influence of peers or the effect of the context of the training on the learner who is asking for assistance, provide

explanation at a group level, provide detailed direction or support when requested and provide clarification, direction or support on an individual basis. While providing support and direction to learners the methods used by the facilitator should not create social or peer group stigma, but should assist in creating a positive learning experience. Support or direction could be provided in the form of handouts given to all, small group reflective questioning, giving demonstrations or examples and providing one to one support away from the group or context.

Adult Learning Principle Five, "Orientation to learning", includes the premise that learning is most relevant when it solves a problem that is real and exists in the context of the learner. There is a relationship between orientation and experience in learning with orientation grounding experience in the current context and moment, which assist in the learning process especially when the current experience challenges held frames of reference. This allows reflection on past experience with current experience to check, test, hold or modify the frame of reference to enable new learning. The concept of learning through experience will be expanded in the next section with an examination of Kolb's Experiential Learning.

Adult Learning Principle Six, "Motivation to learn", includes the premise that learning is more motivating if it helps to solve a problem or creates an advantage for the learner that leads to a internal or external reward or "payoff". The internal payoff, the need for satisfaction, as explained by Wlodkowski (2010) has four elements, success, choice (volition), value and enjoyment. These are considered greater motivators than external payoffs like salary increase. This is consistent with expectancy theory which explains that motivation is a combination of a learner's beliefs that they can learn something (expectancy), that the learning will solve a problem or issue (instrumentality) of importance in their life and to them (valence). As suggested by Wlodkowski, the facilitator can have or obtain skills and characteristics that can make them good motivators of adult learners; expertise, empathy enthusiasm and clarity (see Figure 3.5). Facilitators should also remember that learning has an emotional element an environment that is safe, positive and fun, contributes greatly to learning and the learning outcome (Clapper, 2010).

Characteristics and Skills of Motivating Instructors (Wlodowski, 1985)

1. Expertise: the power of knowledge and preparation.
 - Knows something beneficial to adults.
 - Knows it well.
 - Is prepared to convey it through an instructional process.
 2. Empathy: the power of understanding and consideration.
 - Has a realistic understanding of the learner's needs and expectations.
 - Has adapted instruction to the learner's level of experience and skill development.
 - Continuously considers learners' perspectives.
 3. Enthusiasm: the power of commitment and animation.
 - Cares about and values what is being taught.
 - Expresses commitment with appropriate degrees of emotion, animation, and energy.
 4. Clarity: the power of language and organization.
 - Can be understood and followed by most learners.
 - Provide for learners a way to comprehend what has been taught if it is not clear in the initial presentation.
-

Figure 3.5: Characteristics and Skills of Motivating Instructors (Knowles et al., 2014, p. 199).

There is substantial debate around the concept of andragogy and adult learning; there could be instances where the pedagogical approach could also be effective for adult learners (Knowles et al., 2012). The concept of self-direction and the capacity for adults to be self-directive all of the time has been questioned and it should be recognised that there are times when adults need support and direction; especially in new situations, having new experiences or acquiring new skills or knowledge. The review of adult learning provides a learning framework for the PD while recognising that "learning is a complex phenomenon that defies description by any one model" (Knowles et al., 2014, pp. 200-201).

3.3 Transformative Learning: towards autonomous thinking

The optimum state for decision-making would be for a person to think autonomously, meaning that they are free of the influence of past experience, other people, culture and beliefs. This ideal state would allow them to view every moment and decision as a completely new experience without any pretences or expectation. This however, as Mezirow (1997) would assert, is not the reality rather it is the opposite. People's experiences are created from their points of view and habits of mind, which together create their frame of reference that they use to interpret, construct and define their individualised concept of the world. Their habits of mind are the assumptions that they hold that are broad and generalised like their morals, ethics and philosophical position. These assumptions act as a filter that allows them to interpret or construct meaning about their current experience. Whereas their point of view consists of their meaning schemes like beliefs, feelings, attitudes and value judgements. A person's point of view is easier and faster to change than their habits of mind. This is because they are more aware of the feedback they receive about their points of view from the world. Therefore it is

easier to check, challenge and validate their point of view based on that feedback.

The objective of transformative learning is to develop in learners the ability to think autonomously: meaning to be able to think as an individual. Transformational learning is relevant to design thinking as it involves the changing of a person's beliefs, creating new ways of seeing the world, taking action and reflecting upon experience as part of the process of transformation. Mezirow would assert that the ability to think as an individual is essential "for full citizenship in democracy and for moral decision making in situations of rapid change" (1997, p.7).

3.3.1 Transformational Learning: Experience, critical reflection and development

Transformational or transformative (terms are interchangeable) learning occurs when a learner has a dramatic shift or change in the way they view themselves and their world. This is in contrast to informational learning which is a transfer of learners existing knowledge or skills into new situations or environments. The key concepts of transformational learning are experience, critical reflection and development. One of the assumptions of andragogy is that adult learners bring to learning prior experiences and these experiences can be used in their own and others learning. In the learning environment these experiences can be used to link:

- Explanations or illustrations to prior experience
- Learning to current experience, work or the community
- Activities simulated or real to their assumptions to allow for critical reflection.

Experience however may or may not trigger learning; the response to an experience is individually based. It is only when an individual is unable to respond to change that they will possibly reflect upon the experience, why it occurred or what does it mean (Merriam et al., 2007, p. 144).

Critical reflection occurs when an experience does not or cannot be accommodated in the learner's prior life structure. It is at this point that transformational learning can begin. Critical reflection is a cognitive process by which the learner examines the underlying beliefs, assumptions and values that they have about the experience or problem. The three types of critical reflection identified are content reflection, process reflection and premise reflection. Content reflection is thinking about the experience itself. Process reflection is problem solving or the dealing with the experience or problem. Premise reflection is examining assumptions, beliefs, and values within the context of the experience or problem (Mezirow, 1990). Brookfield's five phases of critical thinking links critical

thinking and critical reflection in transformational learning. Brookfield defines the five stages as;

- Trigger; uncomfortable or perplexing event or experience
- Appraisal; brooding, self examination and finding others who have experienced a similar event
- Exploration; finding new ways of explaining or accommodating the experience or event
- Alternate perspective; new ways of being, behaving, thinking about the experience or event
- Integration; Using the new way of being or thinking within their life.

Brookfield believes that critical thinking helps individuals to scrutinise how they perceive power relationships and enable them to question dominating assumptions or their own taken for granted assumptions of the world. This could reduce the possibility of an individual making unconscious choice based upon the assimilated assumptions of the individual (Merriam et al., 2007, pp. 145-147).

The development of the learner is an inherent and a fundamental outcome of the transformational learning process. For transformation to occur development of the learner's critical thinking abilities are essential. To create new meanings and perspectives learners must develop skills and knowledge in how to be more open, discriminating and reflective about their experience. This can occur as the learner becomes a more mature learner who is open to new people, new situations and new problems. The ultimate goal is to lift the learner's consciousness or awareness of themselves and their world. The term maturing is different to that of the natural course of a person ageing and maturing. The maturing of a learner occurs as part of the transformational process rather than life itself (Merriam et al., 2007, pp. 147-149). Transformational learning can be categorised into two groups those that focus on the individual or those that focus on the sociocultural approach (Merriam et al., 2007, p. 131).

Fundamental to design thinking is the framing phase where there is a focus on defining the problem and seeing the problem through different perspectives. As part of this framing phase the participants' own beliefs and assumptions, prior learning and experience could be challenged. The framing phase is similar to that of transformational learning involving investigation and reflection. The goal of framing is not to assume that we even have the correct problem but rather to investigate and understand the situation and context of problem. To critically reflect upon the perceived problem and to establish the problem exists (Stickdorn & Schneider, 2011). As designers move into the realm of wicked problems they should also take note that transformational learning occurs if those involved are open to the process of transformation and are able to engage in critical

reflection. Participants of design thinking may also experience Brookfield's five phases of critical thinking giving a facilitator greater insight into the action and behaviours of participants enabling them to support and guide participants through the process.

3.3.2 Transformational Learning: Focusing on the individual

Mezirow, Daloz and Boyd represent the different perspectives of individual transformational learning. Merizow is the most developed theory of the three perspectives. Mezirow's Psychocritical approach recognises that not all learning is transformative, the learner can add to their existing knowledge or add new meanings to their experiences without having a transformational change. Merizow's model has four elements; experience, critical reflection, reflective discourse and action. Later research has added to the Merizow model concluding that a person's cognitive development could influence their potential to have a change of perspective or experience the transformational process of change (Merriam et al., 2007, pp. 130-137). Daloz's Psychodevelopmental perspective and Boyd's Psychoanalytic approach to transformational learning adds to Merizow's rational reflective approach by viewing transformational learning as holistic and intuitive. Daloz puts forward three maps to his theory; he uses a storytelling approach, considers the person's cognitive development and acknowledges the whole person in that growth. Daloz considers the teacher to be a "guide, cheerleader, challenger and supporter during the learning process" (Merriam et al., 2007, p. 138). Boyd's Psychoanalytic approach is from the psychological perspective seeing the transformation as an inner journey. The learner must come to terms with their inner conflicts, make sense of the imagery of their own psyche and be aware of their own ego and the collective consciousness. Like Merizow, Dalzo and Boyd who indicate that dialogue is an important part of the transformational process. It enables the learner to raise their awareness of meaning and enables them to decrease their compulsions, obsessions and complexes (Merriam et al., 2007, p. 139).

The design thinking process can be challenging and confrontational when it is used to address wicked problems. Wicked problems have the needs of many stakeholders, which bring to the problem and possible solution the complexity of people with varied sociocultural backgrounds, experiences, educational levels and agendas. Part of the design thinking process is to listen, document and take into account how these stakeholders influence the context, situation and problem when framing the problem. The design thinking facilitator needs to accommodate and understand that part of a person's transformation during the design thinking process is his or her own struggle and need to address their own underlying issues. Dalzo's concept of the teacher reflects the role and challenges of the design thinking facilitator, as being there to support the participants in the design thinking process.

Transformational learning focused on the individual could be incorporated into design thinking in the following way:

- Include experience, critical reflection, reflective discourse and action
- Points of view can be changed through discussion, feedback and validity checking
- Storytelling can create transformation
- Acknowledge that each person is an individual with their own identity
- Acknowledge the whole person, not just their role, job title or label.
- Facilitator should be a “guide, cheerleader, challenger and supporter during”(Merriam et al., 2007, p. 138).

Relating these to my research, it is important for the facilitator to understand that not all learning is transformational. Instead, the participant can simply add to their existing knowledge or add new meanings to their experiences. Understanding that there are limitations to transformational learning, including a person's cognitive development, the facilitator should ensure that the process;

- is not used to apply pressure to a participant to transform or
- expect or guarantee that they will transform during the process.

3.3.3 Transformative Learning: Focusing on the sociocultural

Freire's Social-Emancipatory Philosophy identifies banking and problem posing as two types of education. In banking education the teacher is central and deposits knowledge onto the learner making the learner's role passive. Freire believed that in this type of education the student is oppressed and silent which serves the oppressor and domesticates the student. In problem posing education the teacher and the student are co-investigators in a common reality. Problem posing is in contrast to banking education where the student is liberated, dialogue is essential to the cognitive process, which helps to reveal reality and this in turn, raises the student's awareness of their oppression. Freire proposed the process of conscientisation, which occurs in different levels. The least aware level the student has fatalistic consciousness of the world where they do not question, they are not in control and they cannot make changes. At the midlevel students start to have some awareness of the controls and start to questioning things as they are. In critical consciousness the student has deep understanding of the forces shaping their lives, become agents of change and act to construct a different and just reality (Merriam et al., 2007, pp. 140-141).

Freire's and Mezirow's approaches both contain critical reflection as a key component. The process of critical reflection happens when there is dialogue with other learners about the proposed problem. Freire considered the goal of education to be liberation of the learner through action and reflection upon the world in order to change it. Freire considers conscientisation as a political act the process can be seen as the change of assumptions, beliefs and values, which lead to new perspectives or level of consciousness (Merriam et al., 2007, p. 141).

Freire's theory advances the importance of the problem focus of design thinking and the need to use methods of investigation that assist to raise the awareness of those involved in development of the solution. Most importantly if those involved do experience a shift in their consciousness it could lead to them becoming more aware of the problem. This could result in the development of more appropriate solutions or the participants to become agents of change within the problem. If one of the outcomes of design thinking is that participants can become agents of change then we are one step closer to the ultimate goal of design thinking being a catalyst for improving our lives.

Tisdell's Cultural-spiritual approach considers both the person's spirituality and their culture as having an impact upon the transformational learning experience. Like Boyd, Tisdell saw that symbols and dreams influenced the person. Tisdell's approach considered the importance of the person's cultural position, which included race, class, gender and sexual orientation as fundamental to the construction of knowledge during the transformational learning process. Tisdell considered the person as a whole and included learning within their context like political or historical learning. (Merriam et al., 2007, p. 142).

Tisdell considers a number of factors that create spiritual-cultural transformative learning. Cross-cultural relationships expose the learner to "different ways of thinking and being in the world" (Merriam et al., 2007, p. 142). The educator "needs to be spiritually and cultural grounded in order to promote authenticity in the" learner, to enable the learner to be "authentic and open to experiences" allowing for transformation (Merriam et al., 2007, p. 142). Tisdell proposed that the community setting could be a better venue for learning as it enables the educator to see the community, its spirituality and use different modes of delivery to create a learning experience. The environment of learning needs to allow investigation of the cognitive, feelings and attitudes, relationships and the symbolic levels within the community (Merriam et al., 2007, p. 142).

The multi-disciplinary approach of design thinking could also consider the cultural and spiritual components of Tisdell's theory on the way individuals could participate in the design thinking process. The goal of design thinking is to create the best solution for the end user this could be hindered if there is not an open and authentic participation of the end users. Tisdell's community based approach gives relevance to the process of design thinking not being exclusively studio

based. Instead it should be placed within the community or context of the problem whenever possible to fully explore and understand the problem. Community or context placement will also increase the participants understanding of how or if a solution could work. Most importantly those involved in the facilitation process need to be grounded and able to create an environment that will bring about authentic participation.

The race-centric approach to transformational learning is non-individualistic and concludes that minority groups live in opposition to the cultural norm. This opposition creates opposing realities for this group in comparison to the experience of those in the cultural norm of their social cultural, political and historical context. To create transformational learning using the race-centric approach there should be the inclusion of those minority groups, intra and intercultural negotiation are an important part of learning and to facilitate peoples' deconstruction of their assumptions through dialogue (Merriam et al., 2007, pp. 142-143).

The development of empathy and understanding the experience of minority groups within the context of the conceived norm is important to design thinking. Without an understanding of the perspective of those who are impacted by the problem and having empathy for their situation and needs, the solutions could be superficial or inappropriate. The selection of those involved in the design thinking process is integral to the ability to understand a problem and ideate solutions.

The planetary view of transformational learning is unique as its focuses on how learners relate to the physical world. This view recognises the interconnectedness of the universe, natural environment, the human community and the individual's personal world. The view focuses on raising planetary consciousness emphasising quality of life, diversity and sense of place of communities and spirituality. This approach considers that the learner must move beyond the concept of world market to that of universal context, that our concept of development must include all elements from universe to individual world, quality of life is about community place and diversity not just standard of living and must include spirituality (Merriam et al., 2007, pp. 143-144).

The ability for design thinking to solve wicked problems means having to take a far wider view of the problem. The planetary view highlights the importance of having the ability and perspective to view the problem at a great distance and then drill down to the closest reality. To keep in mind the importance of community diversity and place within the problem and solutions proposed. Most importantly is the realisation that "quality of life goes beyond standard of living" (Merriam et al., 2007, pp. 143), even the most affluent people can have problems and the poorest of people can still be happy. The concept of distance can also include the dimension of time. Therefore a problem could be the result of

the moment in time, the time-frame, and the problem could change with the change or passing of time.

The different perspectives of transformational learning have commonalities and “all theorists are constructivists” (Merriam et al., 2007, p. 144). They view that the learner constructs knowledge and meaning using learning structures consisting of a frame of reference, including the habit of mind and point of view. The importance of dialogue about and reflection on the original biases, beliefs, values, assumptions and symbols are necessary for transformation to occur in the learners point of view. Theories of transformational learning are important to design thinking as we would hope that design thinking would lead to a transformation of the lives of those directly involved in the process and affected by the solution. We would also hope that in the context of social problems that design thinking could bring about social change.

Transformational learning focused on the socio-cultural could be incorporated into design thinking in the following way:

- Using problem posing and the co-creative journey
- Using Multi-disciplinary and inter-disciplinary teams
- Conducting design thinking in the community or context of the problem
- Including and understanding culture and spirituality within the problem's context
- Using and generating empathy for those impacted by the problem
- Both a macro and micro view of the context and problem
- Using distance as a metaphor for time, space, involvement and context

3.3.4 Experiential learning: Focusing on the experience

Adult learning and transformational learning place emphasis upon experience as a core competence of learning. The use of experience in learning supports the investigation of experiential learning and how experience as part of the design thinking process could contribute to learning. Experiential learning is based on the Dewey's principles of continuity and interaction. Dewey observed that learning must have the ability to link current experience with past learning and relate that to possibilities within the future. The interaction of the learner with the situation or context of the experience will influence learning. Within an educational setting this means that the environment and context of learning is important. The educator should ensure that learning takes place in an environment that is supportive and that materials are linked to the learners past knowledge and are

conducive to learning (Merriam et al., 2007, pp. 162-163). Kolb and Kolb in 2005 identified experiential learning as having six general propositions;

- That learning should be viewed as a process not an outcome
- That ideas should be created, ideas should be questioned and refined
- Thinking and feeling should be opposed with doing and reflecting
- Learning is a holistic activity
- Learning occurs when the learner interacts with the environment
- Learning is constructivist.

Kolb identified that experiential learning requires the learner to have the ability to be open to new experiences, be able to view experience from different view points, be able to generate ideas and concepts from their observations and be able to implementation those ideas. These abilities are linked together as a cycle of phases from concrete experience, to reflective observation, to abstract conceptualisation to active experimentation, which allows the learner to continually build on their learning. (Merriam et al., 2007, pp. 163-164). Kolb's experiential learning abilities are aligned with the commonly used design thinking phases, Figure 3.6, the framing phase consists of the concrete and reflective phase, the abstract phase aligns to ideation and the active phase aligns to prototyping and implementation.

Experiential Learning	Design thinking
Concrete Experience	Framing / Reframing Phase
Reflective Observations	Framing / Reframing Phase
Abstract conceptualisation	Ideation
Active Experimentation	Prototyping Phase & Implementation Phase

Figure 3.6: Kolb's model is reflected in the phases of design thinking

Supporting this observation are researchers Beckman and Barry (2007) who investigated design thinking, experiential learning and learning styles. They argued, using Owen's suggestion that design thinking has both an analytic and synthetic element and that it operated in both in an abstract (theoretical) and the concrete (practical) realms, that it could be overlayed onto Kolb's experiential learning abilities. They further developed this to consider that Kolb's reflective conceptualisation and active experimentation phases could be interpreted as an analysis and synthesis phases respectively. They applied this concept to different learning styles that would operate optimally in each quadrant; diverging, assimilating, converging and accommodating (see Figure 3.7). This formed the concept of their innovation process, which is a cyclic process of learning through experiencing, reflecting, thinking and acting. Figure 3.7

illustrates the process moving from observations to frameworks (problem finding), from frameworks to imperative (problem selecting), from imperatives to solutions (solution finding) and back to observations (solution selecting).

	Innovation Process	Learning Styles	Learning Cycle
Experiential Learning			
Concrete Experience	Concrete	Diverging	Observations
Reflective Observations	Analysis	Assimilating	Frameworks
Abstract conceptualisation	Abstract	Converging	Imperatives
Active Experimentation	Synthesis	Accommodating.	Solutions

Figure 3.7: Kolb's model is reflected in Beckman & Barry Innovation Process

Additionally Beckman and Barry (2007) demonstrate in their research that the process needs to complete a full cycle that includes each quadrant, but does not need to follow a defined order. If the cycle is not completed then the solution will suffer. If the process is in the top two quadrants (abstract) there is the likelihood that the solution will be unable to be implemented or will fail in the real context (concrete), as it will be conceptualised abstractly or academically without practical application. Conversely operating in the bottom two quadrants (concrete) only, which is a common “express test cycle” method, ignores the need to understand the higher level complexities (abstract) that exist and the actual or crucial need, rather than addressing the first observed or lower level problem (Beckman & Barry, 2007). When working with wicked problems this can have dire consequence, time and money wasted on impractical, irrelevant or superficial solutions and the users potentially devaluing or rejecting design thinking as a solution generating method.

This has implications for learning and the innovation process; Beckman and Barry (2007) discuss the development and formation of teams that are involved with innovation. They conclude that teams need a mix of the learning styles with leadership in each quadrant being assigned to the person whose skills align with the quadrant rather than a “leader” by title (Figure 3.8). This is supported by Brown (2009) who describes design thinkers as “T-shaped” people with breadth of skills and knowledge and Owen's (2007) characteristics of design thinkers requiring an “affinity for teamwork” and the skills of a generalist “who can reach across disciplines” being able to integrate and involve experts as required (pp. 24-25). Design thinking is not a “single expert” process or a process of hierarchy rather it is a team approach where individuals contribute and participate providing expertise in a coordinated effort (Owen, 2007).

	Learner	Preference
Learning Styles		
Diverging	Leader	Good at idea generation
Assimilating	Artist	Group or logically order data
Converging	Writer	Technical task over task social issues
Accommodating.	Speaker	Hands on experience and action

Figure 3.8: Beckman & Barry Innovation Process Learning styles

Experiential learning can be integrated into the phases of design thinking through the Framing and Reframing Phase providing opportunities for concrete experience and reflective observations, the ideation phases proving opportunities for abstract conceptualisation and the prototyping and implementation phases providing opportunities for active experimentation. Experiential learning could also be incorporated by utilising Kolb and Kolb's six general propositions of experiential learning within the design of the PD and the use of design thinking. Figure 4.9 demonstrates how the commonly used design thinking phases align with and support Kolb and Kolb's the six general propositions of experiential learning. Figure 3.9 also shows how the principles and understanding behind design thinking align with the six propositions of experiential learning including:

- The idea of failure in design thinking is beneficial as a process of learning
- The construction of new knowledge is fundamental to design thinking
- Design thinking is co-creative
- Research should be carried out in the context and environment of the user.
- Design thinking has a empathetic approach that considers the whole context and all stakeholders

Kolb and Kolb's six general proposition of experiential learning.	Design thinking phases	Design thinking principles or activities
Ideas should be created, questioned and refined	Ideation, Prototyping, Implementation, Reframing	
Thinking and Feeling	Framing and reframing	
Doing and reflecting	Ideation, Prototyping and Implementing, reframing	
Learning is holistic	Framing and reframing	Design thinking takes a holistic view of the context and problem
Learning occurs with interaction with the environment		Design thinking occurs in the context, with people and objects
Learning is constructivist		Design thinking constructs knowledge
Learning is a process not an outcome		Fail often to succeed, process before outcome

Figure 3.9: Design thinking and the Kolb's Six general propositions.

3.4 Creating solutions through Action

Design thinking is participatory, action oriented, reflective and user-centred in its method (Brown, 2009). Action is referred to in the transformational learning as a part of the learning process, taking action allows the learner to interact with their environment, people and problems to reflect upon and challenge or support their frames of reference to learn from their experience and actions. Experiential learning incorporates action as part of the learning as doing, active experimentation and the learner interacting with the context and environment; it is through this action that the learner creates experience, uses reflection and acquires new learning. Using action, as a learning process has been the focus of action research and action learning, however there is a distinction between research and learning. Action research is a cycle of action and reflection during and on the action taking, the outcome is documented, often published, research. Action learning means learning from action or concrete experience, the outcome is learning and taking action on that learning (Taylor, 2007; Zuber-Skerritt, 2001). Zuber-Skerritt elaborates on this further arguing that action learning and action research are interchangeable terms, they share common paradigm, theoretical assumptions, praxis which includes action and thinking and is a model that incorporates a problem or project as the central focus of the action. Action learning has similar elements to transformational learning and experiential learning, the use of discussion, doing and reflection as part of the learning process. Taking from Zuber-Skerritt's observations and research the term action

learning will be used for action Learning and action research; as the discussion is not the difference between action learning and action research rather their similarities that are being compared to design thinking.

Marquardt and Waddill (2004) state that all forms of action learning share similar elements which included real people resolving real problems, taking action in real time and using questioning and reflection throughout the process. The action learning framework proposed by Marquardt and Waddill has six components, Figure 3.10 aligns these six components with design thinking.

Design thinking	Action Learning
Problem or challenge focused	Problem or challenge focused
Facilitator lead	Coach driven
Include the end user	Include real people
Interdisciplinary team	Team committed to learning
Identify the right problem	Identify the right problem
Create new learning and insights at an individual and team level	Learning at group or individual level
Frame and Reframing, Ideating solutions and prototyping	Reflecting and identifying solutions
Researching, ideating, choosing / reflecting, implementing, reframing	Action in real time

Figure 3.10: Marquardt and Waddill six components of action learning

The premise of action learning is that people learn best when they take some form of action that they can reflect upon; therefore the problem creates an opportunity for using stored knowledge and development of new knowledge within a meaningful context. Action learning concentrates on asking the right questions to investigate what is known and what is unknown to ensure that the right problem is being addressed. Action is only taken once the problem is clarified and the process of reflection and identification of possible solution is completed (Marquardt & Waddill, 2004). Action Learning is similar to design thinking in its approach to engaging both the problem and the participants. Bason (2010) acknowledges that divergence; having variation of ideas, and execution; having those involved in the problem are key benefits of design thinking. The process of design thinking supports action learning by discovering and defining the problem in the framing phase and learning through action in all phases and providing opportunities for reflection as part of the learning cycle and reframing phase.

However there are difference between action learning and design thinking. Wetzlers (2013) research endeavoured to merge action learning and design thinking as a singular collaborative approach for organisational innovation.

However the outcomes of the research identified that the application of design thinking was limited.

My summary conclusion is that despite the project leaders' explicit attempts to integrate elements of design thinking into the project's methodology, the project should be seen as, at best, a modest attempt with only mixed success at embodying design thinking. (Wetzlers, 2013, p.186)

Wetzler's (2013) research identified that even though there are similarities the difference make the two approaches distinctly different and rather should be used in a complementary way. Firstly, he identified the inclusion of stakeholder involvement in design thinking to be based upon the need of the problem, which is not as democratic as action learning and includes user representation rather than an actual stakeholder of the problem. Secondly, he identified design thinking's use of abductive logic, which is a creative process, which enabled participants to develop new and innovative ideas. In contrast to this he surmises that action learning has limited methods and has less emphasis placed on the development on new or innovative solutions. Thirdly, he argues that action learning is oriented towards growing the capacity of the participants, generating a scholarly contribution while in some cases focusing on disrupting the status quo. However, he considered the primary object of design thinking is that of meeting users needs and this can be achieved without disrupting the status quo. Lastly he highlights the necessity of the skilled design thinking facilitator as core to achieving a successful outcome, which is further supported by Ney and Verweij (2014).

Wetzler identified action learning's limited application of abductive logic, user-centred empathy and prototyping to differentiated it from design thinking (2013). This is an important conclusion as abductive logic or abductive thinking has been seen as one of the key methodologies of design thinking which makes it innovative and unique (Martin, 2009). The development of empathy is a core objective of design thinking and the traits of design thinkers (Brown, 2009; Martin, 2009). The process of prototyping is a core tool and method used within design thinking, to enable testing, fast failure or success and being able engage thinking by doing. Wetzler's observation was that there was limited application of design thinking because the facilitators had little prior experience with design thinking, which supports Ney and Verweij (2014) who concluded that success would be linked to the "creativity, cunning, reflexivity and improvisation skills of those involved". The limited flexibility of action learning is also supported by Ney and Verweij (2014) who concluded that action learning meet only two of the five approaches to being considered a generator of clumsy solutions; whereas design thinking meet four. Wetzler's (2013) conclusion and Ney and Verweij (2014) analysis would indicate that action learning is more rigid and less likely to be able

to tolerate the complexity of a wicked problem or embrace the clumsy messiness of abductive logic.

Action learning can be utilised within design thinking, as identified by Wetzler. Even though there are differences they can be used in a complimentary way. Most importantly design thinking and action learning encompass reflection-in-action as a process and Wetzler's review "overwhelmingly supports the notion that action research and design thinking are fundamentally compatible and hold great promise being complementary to one another" (Wetzler, 2014, pp. 62-63). Therefore it would be possible for learning to be facilitated as part of the action and reflection process of design thinking. The action learning framework (Figure 3.11), outlined by Marguardt and Waddill, has six components that could be used by the facilitator during the design thinking activity to ensure that learning is supported (2004).

Six components to action learning	Application to design thinking
Problem or challenge that has importance to the group	Problem focused on a real work based problem (reasonable adjustment)
Process involves 4-8 members with diverse experience	Break larger group into smaller working groups
There is an emphasis on questions and reflection	Actively encourage and allow for questions and reflection during the process
There must be the ability to take action on solutions developed	Ensure that process of creating reasonable adjustments can be used in job role
Members must be committed to learning on the individual and group level	Participants self nominate and understand that activity is for professional development
The process involves a coach who ensures that time and energy is devoted to developing the group.	Facilitator ensure that groups are working together and moving through the process

Figure 3.11: Six components to action learning (Marquardt & Waddill, 2004, p. 187) application to design thinking.

3.5 Orientations of learning theory

Marguardt and Waddill reviewed five schools of adult learning theory -the Cognitivist, Behaviourist, Humanist, Social Learning and Constructivist approach- and the way these different schools can be incorporated within action learning. Marguardt's and Waddill's analysis concluded that action learning was an empowering and linking tool between the different adult learning schools and that action learning could meet the key conditions required for each of the theories. The five orientations to learning (Figure 3.12) includes the Behaviourist, Humanist, Cognitivist, Social Learning and Constructivist approaches, which illustrate the diversity of and give insights into how individuals learn (Merriam et al., 2007).

Behaviourists control the external environment as an approach to learning. This approach is based on changing behaviour through the process of conditioning.

The Behaviourist work from three assumptions: (1) Changes in a participant's behaviour indicate learning; (2) Learning is influenced and determined by elements within the environment of the learner; (3) Repetition and re-enforcement of behaviour assist in the learning process. The Humanist approach is to develop the whole person and place emphasis on the person's ability to effect change. This approach focuses on the individual and their ability to determine their own learning and to become self-actualising through learning. The Cognitivist approach focuses on the human ability to learn and understand via the internal process of acquiring, understanding and retaining knowledge. The theory implies that humans can reorganise experience and make sense of the environment using insight, perception and attributing meaning. The Social Learning or Social Cognitivist approach focuses on the social context in which people learn. The learner's interaction with and observation of other people enables learning through the imitation of others. Importance is placed on the role model and mentoring as a learning strategy. Constructivists consider all knowledge to be bound within its context and the learners own construction of reality. Learners construct meaning through experience, this construction is a learning process. The emphasis is on the learner changing their frames of reference and their concept of the context and environment. This change is a reflective practice and is a key element of constructivist theory (Marquardt & Waddill, 2004, pp. 187-188).

Five Orientations to learning					
Aspect	Behaviourist	Humanist	Cognitivist	Social Cognitivist	Constructivist
Learning theorist	Guthrie, Hull, Pavlov, Skinner, Thorndike, Tolman, Watson	Maslow, Rogers	Ausubel, Bruner, Gagne, Koffka, Kohler, Lewin, Piaget	Bandura, Rotter	Candy, Dewey, Lave, Piaget, Rogoff, von Glaserfeld, Vygotsky
View of the learning process	Change in Behaviour	A personal act to fulfil development	Information processing (including insight, memory, perception, metacognition)	Interaction with and observation of others in a social context	Construction of meaning from experience
Locus of control	Stimuli in external environment	Affective and development needs	Internal cognitive structure	Interaction of person, behaviour and environment	Individual and social construction of knowledge
Purpose of learning	To produce behavioural change in desired direction	To become self-actualised, mature, autonomous	To develop capacity and skills to learn better	To learn new roles and behaviours	Individual and social construction of knowledge
Instructors role	Arrange environment to elicit desired response	Facilitate development of the whole person	Structure content of learning activity	Model and guide new roles and behaviours	Facilitate and negotiate meaning-making with learner
Manifestation in adult learning	Behavioural objectives Accountability Performance improvement Skill development HRD and training	Andragogy Self directed learning Cognitive development Transformational learning	Learning how to learn Social role acquisition Intelligence and memory as related to age	Socialization Self directed learning Locus of control Mentoring	Experiential learning Transformational learning Reflective practice Communities of practice Situated learning

Figure 3.12: Copied from Table 11.1 (Merriam et al., 2007, pp. 295-296)

In design thinking the role of the participant is to be active and engaged in the process of design thinking; actively involved in the process of solution creation and reflection (Stickdorn & Schneider, 2011). This activity is experiential (experiential learning), involves a team approach of design practice (communities of practice) and reflective in nature through analysis, synthesis, thinking and doing (Reflective practice), is embedded in the context or situation of the problem (Situational learning), which can be the optimum environment and context for transformation of a person's frame of reference (transformation learning) (Merriam et al., 2007). The facilitator assists participants to progress through the design thinking process. The facilitator could create an environment for design thinking or the research that stimulates the process (Behaviourist), allow

participants to be independent and autonomous in their approach to the problem (Humanist), use the design thinking process for skills development through learning and experimentation (Cognitivist), allow participants to take on different roles from researcher to leader dependent upon the phases (Social constructivist) and allow for the construction of new knowledge individually and through interaction with the team (Constructivist). Design thinking is ideally human centred (humanist), a team based activity (Social Constructivist), actively engaged in research and interaction with the context of the problem to gain insights (Constructivist), experimental and action based (Cognitivist), and both systems and artefact focused when attempting to create a change in behaviour or a transformation in thinking in the end user and the problem (Behaviourist) (Brown, 2009; Owen, 2007).

There is a diverse and wide range of literature and knowledge in the academic realm about learning. This diversity means that there are varying views, opinions and approaches to learning. This includes the consideration that learning theories and frameworks are not explicitly correct or there is "no one theory of learning or facilitating learning trumps the others" or includes all the requirements of human learning (Fenwick & Tennant, 2004, p. 55). Secondly that adult individuals are different in so many aspects that there is no way that all adult learners can be generalised into being the same therefore "no one theory of learning or measuring can adequately reflect that diversity" (Docking, 1998). Finally that the idea of "adult learning being distinctly unique or category of its own is highly debatable" (Fenwick & Tennant, 2004, p. 55). In essence human learning and understanding how humans learn could be considered a wicked problem. As learning is an activity that is dependent upon so many variables and changing viewpoints that to be able to create one solution that meets all needs becomes wickedly complex. Rather the pluralism, fluidity and complexity of the problem and solution to adult learning should be embraced, which means there is not one single right solution, instead use the creative adjustment or adjustments (theories or frameworks) that work best for the context and individuals involved.

The examination of learning theory above was not to place design thinking within one school of thought but rather to identify that there are opportunities within design thinking for intentional or incidental learning to occur as part of the process. For intentional learning to occur, the facilitator needs to understand what the learning requirements are and find the best way to facilitate that learning through the use of methods and tools in the design thinking process. This I believe is important as the majority of the commentary and literature about design thinking focuses upon its capacity to solve problems and provide innovation (Martin, 2009, Brown, 2009). There could be the consideration that it is not so much the solution but rather the capacity for design thinking to create change in the participants, stakeholders and end users through the process which changes the thinking and doing, in the context or world, that makes it a creator of innovative solutions. This brings us back to why problems remain unsolved and to Mielach's

(2012) observation that “we can’t solve problems by using the same kind of thinking we used when we created them” therefore a change of thinking is required first. Further, Kolko (2012) argues that some problems cannot be fixed and therefore the role of the design thinker is to lessen the negative impact of the problem on those who it affects. One should consider then that lessening impact may not necessarily involve intervention in a physical or systems form but possibly facilitating a change in the way those affected think and act towards the problem. Therefore consideration and importance should be placed on the process, journey and experience of design thinking rather than a singular focus of reaching a solution as the goal; a shift in thinking maybe needed first before they are able to visualise and conceive the problem and its possible solutions.

Finally, prior to the plethora of literature on design thinking released from 2008 (Johansson-Sköldberg, Woodilla, & Çetinkaya, 2013), Norman (2000) consider design and design thinking and its contribution to education and the needs of 21st century learning. Norman states “a second and perhaps even more provocative way of viewing design is in the context of a pedagogical model involving ‘design thinking’”(p. 91). Further to this he outlines the new paradigm to learning that includes the construction of knowledge through activity and experimentation, the influence of hypermedia on learning attention, the process being learner centred, the learner developing skills in learning to learn, the teacher as a facilitator and the concept of learning for life. Norman summarises this as students needing to “learn to learn” (p. 95).

By understanding their modes of thinking and developing skills for analyzing a need or intention, they can learn how to define available resources and parameters, explore creative options, plan and organize a potential solution, adaptively produce an outcome, and evaluate the results compared to the set standards of the intention. Optimally the students must also be able to integrate and relate this information with other relevant applications. This is designing! (Norman, 2000, p. 95)

Norman’s discussion lends further support to the concept of design thinking being important in its process as much as in its ability to create solutions.

Research studies support the strategies and processes used in art and “design thinking” as skill developers critically needed to hone the desirable characteristics of humanity - to think, reason, communicate and create innovative and appropriate solutions (Norman, 2000, p. 95).

Design thinking’s ability to develop skills and knowledge preclude its ability to develop solutions and innovation (Norman, 2000; Wetzler, 2013; Ney and Verweij, 2014). The ability to develop skills and knowledge is essential if design thinking is to be used as a PD method. The experience of and application of the skills and knowledge required to understand and develop a RA solution has the potential to

developing empathy in VET trainers for people with disability. The role of the PD is not to produce a solution; rather the primary outcome is the development of skills and knowledge in RA.

Chapter Four: Design thinking

4.1 Introducing design thinking

This research started with the search for an empathic and a bottom-up approach to help VET trainers to understand the needs of students with disability in training. I chose to explore design thinking in this context because of its rich focus on user-centred innovations. The concept or idea of “design thinking” is not new, however it became increasingly popular from the beginning of the 21st century (see Figure 4.1) with literature increasing dramatically in 2009 (Johansson-Sköldberg et al, 2013). As a designer employed in non-design related industries, I applied design approaches to many facets of my work, however I was not consciously considering it design. As a traditionally trained designer the concept and definition of design was related to the creation of an artefact. Designers like Brown (2009) play a significant role in advocating design practice as no longer being restricted to the world of the artefact. Instead, designers should engage in the design of new “processes, services, interactions, entertainment forms and ways of communicating and collaborating”. Brown (2009), Buchanan (1992), Johansson-Sköldberg et al (2013) acknowledge the role and application of design and designers working in non-traditional design contexts. Brown invites designers to become apart of “the natural evolution from design-doing to design thinking.” Norman (2010), Moggridge (2008), Kelly (2010) and Cross (2011) also advocate for and promote an expanded concept of design thinking and the designers role.

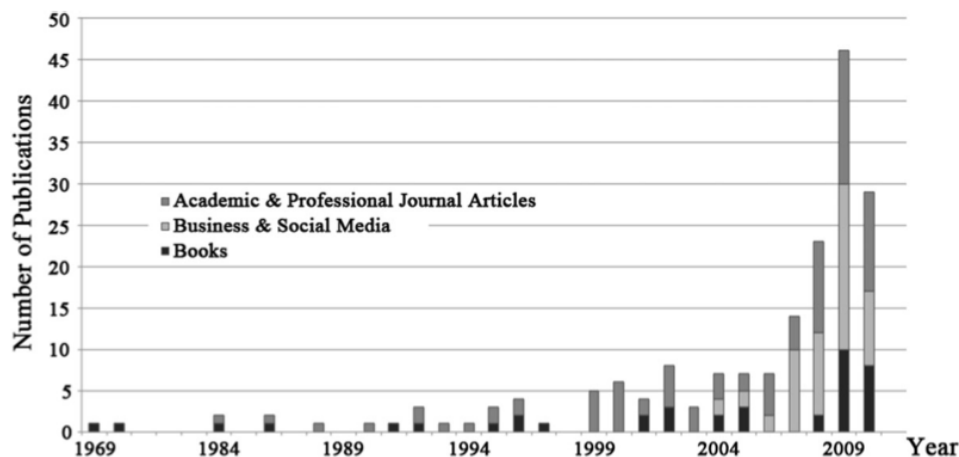


Figure 4.1: Timeline of Publications by Type Johansson-Sköldberg et al, 2013, p. 123

In the academic realm, the concept of design thinking is not new. There is a rich body of knowledge being published in this area. For example, the theoretical discourse of the broader application of design can be found in Simon's (1969) *The Science of the Artificial*, Rittel and Webber's (1973) *Dilemmas in a General Theory*

of Planning, Schon's (1983) *The Reflective Practitioner*, and Buchanan's (1992) *Wicked Problems in Design Thinking*. These publications contributed to the body of knowledge and discussion of the relevance of design, the designer and design thinking as a foundation for the later discourse in design thinking (Johansson-Sköldberg et al, 2013; D'Ippolito, 2014).

There has been increasing interest in and examination of design thinking from non-design related disciplines and non-designers, in particular business, wanting to understand and learn how to embed design thinking as a new way to employ innovation, develop new strategy and create a competitive advantage (Martin, 2009). There is optimism that design thinking could develop solutions that embrace the challenges and complexities of the business environment and the wicked problems facing society in the 21st century (Leavy, 2011; Kimbell, 2011; Martin, 2009; Ney and Verweij, 2104).

Johansson-Sköldberg's et al (2013) in-depth critique of the design thinking discourse identified two distinct contexts for design thinking, the managerial realm "design thinking" and the design realm "designerly thinking". Johansson-Sköldberg et al propose that 'designerly thinking' is the "academic construct of the professional designer's practice and theoretical reflections around how to interpret and characterise" these competencies. In contrast to "designerly thinking" Johansson-Sköldberg et al consider "design thinking" as a term to be used when "design practice and competencies are used beyond the design context" or is design for or with people who do not have an academic design background. They reserve the term "design thinking" to the application of design methods and to be considered a simplified version of "designerly thinking" in particular when applied in a management discourse. Within the literature classified by Johansson-Sköldberg et al. as (see Figure 4.1) design thinking the earliest work was 2001, indicating that this discussion could be less than 15 years old versus the 50 plus years of the designerly thinking discourse. However what is evident in their review is that the concept of designerly thinking and design thinking being strictly distinct is more as a categorisation of the discourse than to define a meaning of "design thinking".

	Creative dimension		Shaping dimension		Applicative dimension
	DESIGN AS CREATION OF ARTEFACTS		DESIGN AS A PROBLEM-SOLVING ACTIVITY		DESIGN AS A REFLEXIVE PRACTICE*
Definition	Design research consists of studying, researching, and investigating the artificial made by human beings and the way these activities have been explored in academia or employed in manufacturing.		Design is a problem-solving activity involving the definition of the problem, the identification and generation of alternative solutions, and the evaluation and selection of the most suitable one(s).		By complementing Simon's cognitive perspective, the designer is conceived as a practitioner focusing on the relation between creation and reflection-upon-the-creation that allows for constantly improved competence and re-creation.
Source	Simon (1969)		March and Smith (1995)		Schön (1983)
Other relevant sources	Krippendorff (1989, 2006)		Buchanan (1992), Petroski (1996)		Bousbaci (2008), Dorst (1996), Rylander (2009)
Implications	Design is conceived as the activity aiming at exploring the creative input of individuals and/or firms and how it is shaped for the implementation within firms or other entities.		Reconsidering the role of design know-how in new product development and innovation processes.		Managers are well aware of the important areas of practice that fall outside of technical rationality. While dealing with decisions under uncertainty, managers develop a problem-solving ability based on intuition rather than the study of theory or techniques.
					Design represents the negotiation between problem and solution through the activities of analysis, synthesis, and evaluation. The designer plays a prescriptive role as (s)he describes how the world might be.
					Design relates directly to the strategy of the firm. It seeks to optimise consumer satisfaction and company profitability through the creation of form, durability, and values along with products environments, information, and identities.
					Design is conceived as the means to increase the competitiveness of firms. This dimension of design captures the possibility to apply design reasoning and principles to the formulation and execution of strategy.

* Inspired by Johansson-Sköldberg et al. (2013).

Figure 4.2: The evolving nature of design and its dimensions (D'Ippolito , 2014, p. 29)

Building upon the work of Johansson-Sköldberg et al (2013) D'Ippolito provides a summary of the authors, within what she considers the evolving nature of design and its dimensions see Figure 4.2. D'Ippolito positions the authors across the creative, shaping and applicative dimensions. This represents the changing theories, the authors, the implications on the practice of design. Figure 4.2 illustrates the activity of design and the designer moving from a creative activity (design as creativity), to a problem-solving activity (design as innovative), then as a reflexive practice (design as improvement), as a making sense of things (design as practice), and as a key input of strategy (design as strategy).

	<i>Design thinking as a cognitive style</i>	<i>Design thinking as a general theory of design</i>	<i>Design thinking as an organizational resource</i>
Key texts	Cross 1982; Schön 1983; Rowe [1987] 1998; Lawson 1997; Cross 2006; Dorst 2006	Buchanan 1992	Dunne and Martin 2006; Bauer and Eagan 2008; Brown 2009; Martin 2009
Focus	Individual designers, especially experts	Design as a field or discipline	Businesses and other organizations in need of innovation
Design's purpose	Problem solving	Taming wicked problems	Innovation
Key concepts	Design ability as a form of intelligence; reflection-in-action, abductive thinking	Design has no special subject matter of its own	Visualization, prototyping, empathy, integrative thinking, abductive thinking
Nature of design problems	Design problems are ill-structured, problem and solution co-evolve	Design problems are wicked problems	Organizational problems are design problems
Sites of design expertise and activity	Traditional design disciplines	Four orders of design	Any context from healthcare to access to clean water (Brown and Wyatt 2010)

Source: Lucy Kimbell

Figure 4.3: Different ways of describing design thinking (Kimbell, 2011, p. 297)

In contrast to this, Kimbell (2011) reviewed the early and late literature together (see Figure 4.3) and categorised what she considered to be the “different ways of describing design thinking” (p. 297). In this review she places design into the cognitive (problem solving), the theoretical (wicked problems) and the organisational (innovation) context. Kimbell, unlike D'Ippolito, did not include the element of creativity or the literature of Simon. D'Ippolito's study recognised design and creativity as a significant element of the process of new product development.

Brown (2009) explained that in a traditional design process the designer was the driver of the creative solution, which was usually aesthetic having little concern for the end user. However, Brown believed that designers and the mission of design was to create products and services that would improve the lives of others. Brown encouraged designers to be accountable and aware of their contribution to the lives of others. Brown was advocating for a human centred approach to design. He considered that design thinking created an opportunity and process for the designer and the client to work together to develop the solution. As a team they would work to refine the problem statement, build empathy and understanding of the stakeholders and therefore develop a user focused solution.

Bason (2010) suggested that using co-creation to develop innovative solutions is a similar process to 'participatory design', 'co-design', 'design attitude' and 'design thinking' which he emphasised as central processes to innovation. These similarities of process can be seen in Archer's (1965) systematic method, in which he discussed design procedure that consisted of three design phases containing a set of six overlapping steps (Figure 4.4). Archer's design procedure outlines what later advocates of design thinking would consider, the first steps towards the design thinking process. Archer's proposed design process included action and reflection, inductive and deductive reasoning, subjective judgment and the allowance for looping back to previous stages. Archer's perspectives of the design process lay the foundation to many design approaches available in the recent design thinking movement. For example, Archer's design phases could be paralleled with the Human Centred Design approach of hear, create, deliver as illustrated in Figure 4.4 (IDEO, 2010).

Steps and Phases of design			
Phases	Steps	Process	HCD
Analytical phase	Programming Data Collection	Observation Measurement Inductive Reasoning	Hear
Creative Phase	Analysis Synthesis Development	Evaluation Judgement Deductive Reasoning Decisions	Create
Executive Phase	Communication	Descriptions Translations Transmissions	Deliver

Figure 4.4 : The Design phases and steps, adapted from Archer (1965)

Further to the concept of steps and phases Archer gives consideration to the idea of a solution. He specifies that a “rigorous solution” needs to be feasible and desirable, however it must give due consideration to viability in terms of cost and complete information. He considered this as finding the right solution for the right problem. Brown (2009) would later propose the use of feasibility, desirability and viability as important constraints that are pivotal in providing design innovation (p.19). Figure 4.5 show that design innovation, as discussed by Brown is the intersection of desirability, viability and feasibility. Brown's design innovation could be considered to be similar to Archer's concept of the “creative leap”. However it is important to note, that Archer and Brown emphasised that structure and constraints facilitate innovation and creativity.

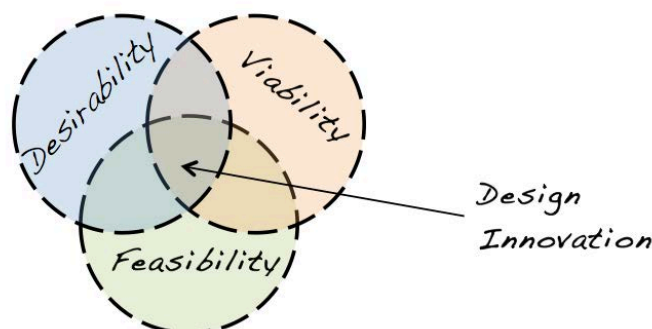


Figure 4.5: Design innovation adapted from Brown (2009)

Therefore disconnecting design thinking from the practice and history of design provides no benefit to designers or non-designers. Rather it devalues the knowledge and skill that provides a foundation for design thinking (Kimbrell, 2009). Design thinking is more than a set of steps, phases, tools or a single method. Design thinking includes the “creativity, cunning, reflexivity and improvisation skills

of those involved, as well as the informal, unspoken rules that influence the proceedings" (Ney & Verweij, 2014). It is important not to lose the characteristics and influence of designerly thinking in the design thinking process. Designerly thinking is often referred to, but ill conceived in implementation by non-designers (Martin, 2009; Wetzler's, 2013). Brown (2009) identified that a depth in skills, knowledge, experience and designerly thinking were traits required of design thinkers. These traits cannot be gleaned from a book or short course rather they are acquired over time through experience and practice.

In this research, I pay attention to Archer's 1965 article Systematic Method for Designers, which was originally a series of articles written between 1963-64 (Worldcat.org, 2015). This article is significant because of his references to design thinking, the role of the designer and consideration of systems and cybernetics and the application to design, which he outlines as an assistive device allowing designers to work with the complexity of problems (1965). Archer (1965) recognised that design needed to find ways "to incorporate knowledge of ergonomics, cybernetics, marketing, and management into design thinking" (p.57). Archer, like his later counterparts, was advocating for an expanded view and role of design in society, while inviting designers to reassess their own role in and influence on the design process. Archer (1965), like Brown (2009), proposes that designers need to have varied and extensive experience across disciplines combined with the ability to be flexible and creative in thought: the T-shaped individual. Archer considers the use of heuristics, plausible rather than exact reasoning, cybernetics, the understanding of control mechanisms of living organisms, as approaches to solving problems and affirms the necessity of the creative idea or the 'creative leap' of the designer. Martin (2009) would later refer to heuristic and the creative leap (abductive thinking) as being unique elements of design thinking and part of reason for its ability to produce innovative solutions. Archer's expanded view of design and his design process, like design thinking, had a human focus.

Understanding and learning how to apply RA in VET was considered in this research to be an innately human problem, consequently addressing the problem would require understanding of the human element. The literature indicated that direct and indirect barriers to participation for people with disability in the community, which included training, were created by people's negative attitudes and behaviour toward people with disability. To decrease or remove these barriers included building empathy for people with disability. Therefore having empathy for people with disability would assist trainers to understand and apply RA in training.

4.2 Addressing unmet need

Archer's (1965) problem-solution theory concluded that unmet needs existed because of gaps or obstacles. Finding the means to resolving these gaps or obstacles was what he considered the problem. Complex problems required the reconciliation of the problems' competing and conflicting constraints, while considering the context of the problem. This meant understanding the complex relationship between sub-problems, and the implications of those relationships on the final solution. This process would not result in a solution at first; instead it would create a clear statement of the problem. He saw design and the resolution of problems as a process of change. This process of change was either a pull toward reward or push away from penalty. With the solution being a result that was considered good by the designer; which was a balance of reward and penalty. He alluded to the messiness of problem solving. He observed that obtaining data about real life problems was difficult and resulted in incomplete information. He believed that there was a tendency to seek the root cause, use previous experience or solutions without consideration of current context or to use the first solution that arises without further consideration of alternatives. He envisaged design problems as existing across a continuum from simple to highly complex. A simple problem could be a non-existent problem or could be solved by using a simple process. A highly complex problem often contained human problems that required the resolution of sub-problems, had conflicting stakeholders goals and values, and opposing reasons for addressing the problem. The notion of well defined and ill defined problems has been discussed within current literature however Archer's concept of the existing and non-existing problem gives consideration to the possibility that some problems only exist as a construct of a person's view point.

A problem can be non-existent if it can be solved by a simple process, such as a person's disability does not always create impairment or be disabling. Because with the introduction of the right support (process) for the person their disability no longer has an effect upon that person's capacity (non-existent problem). However that does not stop an onlooker from considering the person as having a disability (person's view point). Therefore the problem or need exists before the process is applied, but exists only as a person's viewpoint after the solution has been implemented. Thus, when considering problems within a social design context it is important to recognise that the process of co-creation or looking for a solution may resolve the problem. It is important to give consideration to the possibility that problems are a result of context or viewpoint rather than a certainty or fact. This means having to investigate if the problem exists all of the time, some of the time or only under certain conditions. The investigation assists in the development of a problem statement, which could include multiple viewpoints, prior to seeking a solution.

4.3 The creative leap

Archer proposed the creative leap and “intuition and inspiration” as being essential and unique to the designer and the design process (1965, p.77). The creative leap is the ability to conceive the obvious solution. However the solution only seems obvious after the fact because it becomes the obvious or common sense solution once the solution has been presented or implemented. To address this Archer proposed the use of the systematic method of design, emphasising that it did not lead to automation or remove the necessity of the creative idea. Rather it provided a point of reference in complex conditions. By using a set of checkpoints that could be developed from previous experience or knowledge, allows great energy to be focused on the necessary and creative not the mundane. Archer’s systemic method was suggested as a way of reducing the:

- Risks of being wrong by using an incomplete or inappropriate solution
- Probability of getting it wrong is high due to a lack of experience
- Cost or load on the designer because of the complexity and number of stakeholders involved (feasibility, viability and desirability).

The design thinker should give consideration to Archer’s concepts as they provide two important elements for practice. Firstly it allows for the documenting and development of skills and knowledge over time through the use of a systems approach, learning to learn; secondly it does not discount the creative element rather it gives credence to the notion that by systemising the mundane and more obvious there is more room for the creative.

4.4 Consideration of creativity in practice

Mackinnon (cited in Cleese, 2015), stated that creativity has no link to IQ rather the individuals who are seen to be more creative give themselves the ability to play and be open to possibilities. According to Cleese “Creativity is not a talent it, it is a way of operating”. This statement is important because in social design, creativity is a process closely related to in-depth research and analyses, rather than depending on inspiration. Creative output to social challenges depend very much on the setting up of the right environment or circumstance and using a process that most benefits being creative. Cleese provided a structure, systemic method, for achieving this access to ‘creativity’. He proposed that to be creative there should be the allowance for space, time, time and confidence. This would mean for the design thinker that these elements would be beneficial as part of the design thinking process. To become ready and open for design thinking the design thinker should be in the right:

- Physical space that supports the activity of design thinking

- Psychological space to be able to think freely.

While ensuring to allocate the time to prepare:

- A space for design thinking
- The mind by removing or setting aside the mundane, contrived and habitual thoughts of the day,
- The thinking and framing required as part of considering the problem and possible solutions.

The second time element Cleese considers is time applied as effort towards being creative. His concept suggested that for design thinking to be a creative process the design thinker needed to:

- Spend time with the problem, idea or solution,
- Allow and accept that ambiguity and confusion are part of the process
- Be in and accept the mess of the creative process.

Mackinnon discovered that the most creative professionals spent more time playing with a problem before they tried to resolve it compared to their less creative counterparts. Mackinnon (as cited in Cleese, 2015) and Archer (1965) suggest that playing is about not using the first idea or solution. Rather it was about tolerating the discomfort and anxiety of an unsolved problem. Having the confidence to play. Which means being open and therefore removing the notion of a right or wrong idea while playing. IDEO uses failure positively, they embrace failure as part of the process. Brown suggested the IDEO way was to “fail early to succeed sooner” (2009, p. 17). Therefore staying open and playing with the problem is part of the process that allows other options to emerge, which may seem like a “creative leap”(as cited in Cleese, 2015). Lawson and Dorst (2009) consider this as building a bridge between the current context (problem) and the future possibility (solution).

This systemic process of design and design thinking empowers the process of creativity. Crismond and Adams (2012) researched how to improve the learning and capabilities of students learning design. They discovered a number of the practices of informed designers versus beginning designers supports the views of Cleese, Mackinnon and Archer (see Figure 4.6). They found that informed designers:

- **Used problem framing:** which included delayed decision making to enable them to understand and explorer the design challenge.

- **Used research:** that built an understanding of the users, the problem and possible solutions options
- **Have idea fluency:** used brainstorming and divergent thinking to generate and explore options to avoid the trap of the single solution
- **Used drawing and modelling:** the use of drawings, models and prototypes enabled them to understand and explorer their proposed solution.
- **Balanced benefits and trade-offs:** they balanced these when making judgements or decisions about, and when justifying design solutions
- **Used tests and experiments:** these helped to validate, learn and optimise input or feedback from users, prototypes and materials.
- **Used diagnostic troubleshooting:**, focused on what does not work in a solution and diagnosed these issues.
- **Used a managed and iterative design process:** they used a strategic and managed process that focuses on improving designs through a cycle feedback, and understanding of the problem and solutions
- **Used reflective design thinking:** they learnt from their own and others practice, by documentation and reflection during and after the process.

MATRIX PATTERNS: BEGINNING VS. INFORMED DESIGNERS	DIMENSIONS OF INFORMED DESIGN						
	LEARNING WHILE DESIGNING	MAKING KNOWLEDGE-DRIVEN DECISIONS	WORKING CREATIVELY TO GENERATE DESIGN INSIGHTS & SOLUTIONS	PERCEIVING & TAKING PERSPECTIVES INTELLIGENTLY	CONDUCTING SUSTAINED TECHNOLOGICAL INVESTIGATIONS	USING DESIGN STRATEGIES EFFECTIVELY	CONNECTING AND REFLECTING ON KNOWLEDGE AND SKILLS
A. Problem Solving vs. Problem Framing	•	•	•	•		•	•
B. Skipping vs. Doing Research	•	•		•	•	•	•
C. Idea Scarcity vs. Idea Fluency	•		•			•	•
D. Surface vs. Deep Drawing & Modeling	•	•	•		•	•	•
E. Ignore vs. Balance Benefits & Trade-offs	•	•		•		•	•
F. Confounded vs. Valid Tests & Experiments	•	•			•	•	•
G. Unfocused vs. Diagnostic Troubleshooting	•	•		•	•	•	•
H. Haphazard or Linear vs. Managed & Iterative Designing	•	•	•	•	•	•	•
I. Tacit vs. Reflective Design Thinking	•	•				•	•

Figure 4.6: Mapping the contrasting patterns of the Matrix to key dimensions of informed design
(Crismond & Adams, 2012, p. 750)

Crismond and Adams like Cleese, Mackinnon and Archer see that the process of being creative requires a supportive process, structure, thinking and practice for

creativity to come to fruition while utilising the talents, efforts and intelligence of those involved. This understanding of the creative process is important when considering solving social problems that have been or are created by the thinking of those who are part of the problem. This is even more important when those who are part of the problem are also asked to find a solution; in this research the trainer. The thinking of those involved could be the problem and barrier to finding a solution. Therefore transformation of the thinking would be required and this would be seen or experienced as the creative leap; the “ah ha” moment of new insight.

4.5 Design and complexity

Discussion and review of design thinking should not exclude design practice and the concept of messiness that exist in the process of considering complex problems. The success of design thinking is linked to the practice of design and the skill and knowledge of the designer's designerly thinking. Fundamental to this understanding is the recognition that as the practice of design moves from a simple process, the business of the “brief”, to the complex process of addressing wicked problems there is an increased messiness within the process.

Design is a messy kind of business that involves making of value judgements between alternatives that may each offer some advantages and disadvantages. There is unlikely to be a correct or even optimal answer in the design process, and we are not all likely to agree about the relative merits of the alternative solutions (Lawson, 2005, pp. 81-82)

To understand the role of design thinking in addressing complex problems consideration should be given to the messiness of the practice of solving complex problems. Pastor's (2013) Design 1.0, 2.0, 3.0, 4.0 (see Figure 4.7) design activity as a series of channels moving from simple to complex.

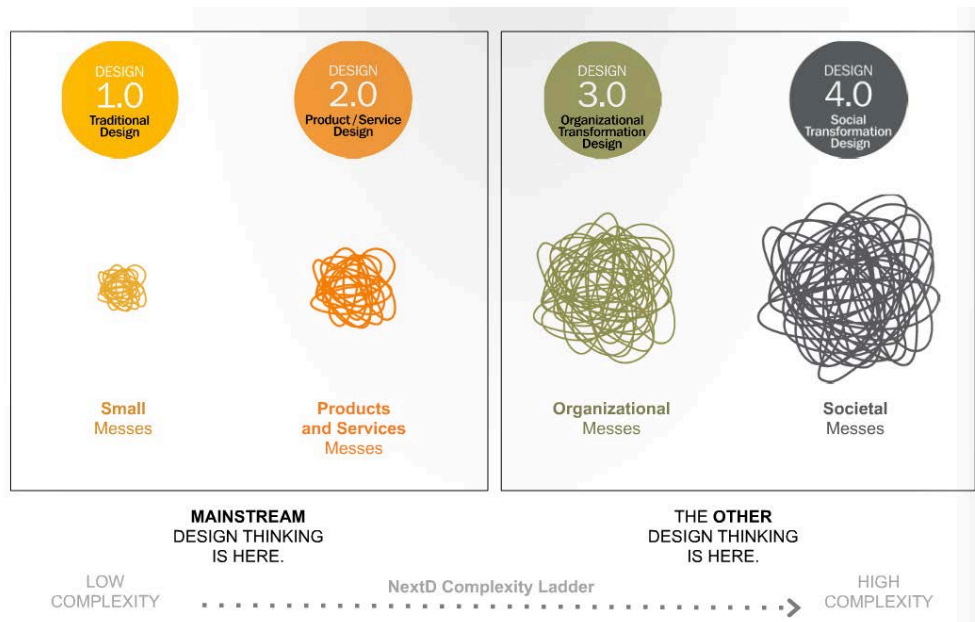


Figure 4.7: The other design thinking (Pastor, 2013. p. 8)

Pastor's (2013), Figure 4.7, illustrates the design process as four channels that move from traditional design, which is small in mess and problem complexity to social transformation design, which is extremely messy and a highly complex problem. According to Pastor (2013), the four levels of design are:

- Design 1.0: Traditional design is a part of the mainstream design thinking approach, limited typically to one designer, has low complexity and small messes.
 - Design 2.0: Product and service design is a part of mainstream design thinking, which can involve a design team and other related disciplines, and has increased complexity and messes related to the design of products and services.
 - Design 3.0: Organisational transformational design is outside of the mainstream design thinking approach, involves multiple stakeholders and multidisciplinary teams, has complexity and messiness related to organisational wants, needs, restrictions and context.
- Design 4.0: Social transformational design is outside of the mainstream design thinking approach, involves extensive diversity in stakeholders and interdisciplinary teams, has high complexity and messiness related to the conflicting needs and wants of stakeholders and the society.

Pastor's perspective layers complexity based on the impact of the design intention to the stakeholders. For example, the social implication of design in Design 4.0 requires systemic integration while discrete problems of Design 1.0 requires form-giving design like direct visual communication systems. The working relationships become more complex and messy as the problem has more

stakeholders. At design 1.0 it could be a designer and client working together, where as at design 4.0 it could be multiple stakeholders, disciplines and team members. This is not a hierarchy or linear process, neither channel has more value than another and the design channels are not independent as illustrated.

When using design thinking to resolve social problems understanding the integration and influence of design into people's lives and society can be achieved through the development of empathy and understanding of the people and context. This process identifies if there was a "top down" approach and the level of participation or influence people in the context had on the design of the systems, processes, artefacts and social structures that exist in the current context and problem. This is relevant because it identifies if there is conscious or unconscious activity, behaviour and experience occurring and the influence of this upon the problems that may exist. This is the messiness of social problems. There is no one reason for or solution to the problem. Rather it is a messy relationship between the users, stakeholders, the context and the designs that influence and impact the problem.

4.6 Design thinking in education

The changing role and significance of design and the designer is having an impact on the practice of existing designers and the education of future designers. Kueh, Medley and Price (2013) discussed how the changing nature and value of design, the role of the designer and the changes being made to facilitate this in university based design education in Western Australia. They identified that the practice of design is expanding from the "aesthetic, branding and communication design to innovating organisational change" from an artefact to systems role (p. 3). This consequently shifted the role of the designer from that of "production to planning, facilitating and strategizing innovation" moving further along the channels of design from channel one to channel four (p. 3). Kueh et al. envisaged the future role of the designer as being inline with channel three working across realms, being involved in interdisciplinary teams and contributing to projects across the business, social and government sectors. The use of design thinking and designerly thinking are skills of the designer. These skills can then be applied within fields of design from service design to graphic design or other realms like social services, economic development, environmental services or business consultancy which are traditionally non-design fields (Kueh et al., 2013). In facilitating the changing role of the designer the new educational curriculum goes beyond the creative and production orientation of traditional design education instead it includes the development of skills and knowledge through experience with design thinking and projects that require the application of those skills. Kueh et al (2013) made changes to educational curriculum that included developing the skills and knowledge of students in user-centred design approaches (bottom up), co-creation practices (designing with people),

visualisation techniques (thinking through drawing), deconstructing situations (the right problem), and trans-disciplinary practices (T-shaping).

The interest in design thinking has extended from the education of designers to the use of design thinking as a method of bringing innovation to education. Anderson, Timms and Hajhashemi (2014) investigated the use of design thinking as a method for improving online learning development by academic staff and students. Design thinking was found to be useful for academics and students as it provided “scaffolds for designing new ways of delivering and supporting online learning using innovative and creative techniques” (Anderson et al. 201, p. 9). The overall benefits of design thinking was to shift the thinking of those involved from using past modalities and instead look to leverage the advantages of Information Communication Technology while focusing upon the needs of the learner. Anderson et al. examined the ‘intuition’ of a designer briefly discussed by Johansson-Sköldberg et al (2013), as tacit knowledge or ‘hidden knowledge’ (p. 6) as a possible limiting factor to teaching design thinking. Using Castillo’s four dimensions of tacit knowledge they concluded that non-epistemic tacit knowledge (gut feelings) and sociocultural tacit knowledge (cultural fabric) “are of particular relevance to implementing design thinking” (p. 6). They stated that tacit knowledge is unable to be partially or completely translated into steps or methodologies making it difficult to be taught or learnt. This reaffirms the limitation of teaching and using design thinking as model, methodology or toolbox as it ignores the tacit knowledge held by the designer acquired through education, practice and experience.

4.7 Design thinking as an educational tool

The application of design thinking as an educational tool for pre-service and in-service teachers identified design thinking as being able to assist teachers to create curriculum that developed 21st Century learning skills in students and as a “critical teacher competency” that can create innovation and change. (Koh, Chai, Wong & Hong, 2015, p. 123). The researchers identified that curriculum that embraced design thinking’s ability to negotiate the ambiguity and uncertainty involved in addressing real world problems assisted in the broadening of the student’s educational experience. Design thinking enabled student’s to demonstrate traits that were a part of the 21st Century learning skills like innovative and reflexive thinking, developing self-awareness and being socially conscious. Koh et al. (2015) identified that design thinking enabled teachers to develop curriculum in an iterative process assisting them to move from previous pedagogical frameworks to new ways of conceiving and constructing curriculum. Koh et al. (2015) however identified a number of challenges associated with the acquisition and application of design thinking by teachers. Koh et al. (2015) identified design learning, design practice and design dispositions as design fluencies required to apply design thinking successfully.

Koh et al. (2015) proposed that knowledge of design problems, processes and practices and design dispositions are interwoven elements of design thinking. Their research evidenced the design practices of expert designers when engaged in problem solving included using a “breadth-first strategy where they identify problem subcomponents before considering the sub-components in detail”, “mentally evaluating their proposed solution before implementation”, “test[ing] their ideas through trial and error during implementation”, “hav[ing] clear rationales for undergirding their design decisions” and having a “greater repositories of problem solutions from their design experiences” (p. 110). Design practice was argued to be supported by the design dispositions of being able to analyse and synthesis information, turn “ideas into concrete solutions”, embrace ambiguity and “open-ended situations”, “take calculated risks”, learn from failures, using personal judgement ‘intuition’ rather “than accepting existing solutions” and the “open-mindedness” to incorporate inputs from other disciplines (p. 111). Koh et al. (2015) proposed that for teachers to develop design thinking their design knowledge needed to be applied in design practice and should be underpinned by the design depositions. Koh et al. (2015) suggested that the design of different design experiences, putting design into practice, could influences the development of design thinking skills. Their review indicated that the use of multiple cycles of design tasks with increasing complexity, understanding design patterns, use of reflective discourse while designing to articulate the rationale and build a repository of knowledge would assist teachers to develop design skills. The design experience should be supported by instruction that enables teachers to be able to analyse and explain design knowledge and reasoning, use a reflective discourse that focuses on practice, develop knowledge of how or when to apply different design solutions or patterns, assist in shifting beliefs and increases confidence.

Koh et al. (2015) identified that there are also risks involved in using design thinking as a critical teacher competency. They raised concerns that knowing how to design effectively should not be an assumed as a natural skill. That the use of design thinking as a curriculum could possibly impact students having content mastery, therefore there maybe a disconnect between problem solving versus exam scoring. The use of design talk, being reflection in action, raises the question of what is good design talk and the ethical issues associated with whose values and beliefs are being employed in the process. The recognition and acceptance by those using design thinking that the changes created and the new approaches will bring with them new implications and possible problems. Even with these risks Koh et al. (2015) suggested the need for further research and development of design thinking in education applied to different subject areas and in systemic applications in strategizing education goals, systems and processes by school leaders and policy makers.

4.8 Design Thinking and its application to VET

The design thinking approach supports the QVDCSR (2010) that trainers should use a learner centred approach, focusing on individual needs, and any decision about reasonable adjustment should meet the needs of the individual learner. Cocks and Thoresen (2013) further supports this suggesting that the adoption of a holistic case management approach and using a team approach aimed at supporting the individual learner would assist learners in greater likelihood of success in VET. QVDCSR (2010) gives guidance to trainers when working on reasonable adjustment: that there should be a range of people including teachers, support personnel and the learner as part of the consultation and negotiation process so nobody is disadvantaged by the proposed solutions. In short, a team approach.

Brown (2009) cautions that with the best intentions and enthusiasm in solving the problems in front of us we can unintentional create new problems. This should not stop us from trying to create solutions but should give` solace that there will always be room for improvement or by solving one problem we may just as likely uncover another problem (Brown, 2009). IDEO (2011) recognises this issue and seeks to address it by using solution prototyping and inbuilt acceptance of failure as part of the design thinking process emphasising that failure is merely a step forward in the learning process for those involved. Without reflection on failure or success there would be no way of understanding how a solution works in the present or what future adaptations or changes may be needed to meet needs of the user or the environment (IDEO, 2011). Bason (2010) would argue that this is where and why current institutional processes and structures, which lean to toward precautious bureaucracy, limit innovation and do a disservice to people they are serving. Design thinking could be a possible method to assist the VET sector to address the issues identified by Reynolds and Barnett (1993), Guthrie (2009) and DEEWR (2012) that the VET sector needs to become more flexible and adaptable to meet the ever changing needs of industry and the VET student. This change does not need to be radical or disruptive rather a manageable process that can balance the effect of the changes on those stakeholders involved in the process (Koh et al. ,2015).

Design Thinking for Education (2011) was developed by IDEO as a new approach to creating innovation in the school based education sector. IDEO's consultation with education providers identified that challenges facing educators are real, complex, and varied and that they needed new tools, methods and a change to their approach to addressing these challenges. The design thinking methodology proposed by IDEO (2011) for the education sector was discovery, interpretation, ideation, experimentation and evolution. The IDEO (2011) approach was successful in assisting educators to become more flexible and innovative in their approach to developing solutions. IDEO (2011) states that design thinking is a mindset in which there is a belief that people can make a difference, it is human

centred, it is collaborative, it is optimistic and it is experimental. This mindset supports Connor (1993) who pointed out that creating reasonable adjustment in VET is as much about attitude as it is about practices, methods, delivery, assessment and environment. IDEO (2011) led the development of Design Thinking for Education with the conceptual foundation that to change education and learning, teachers need to be the designers of and fully involved in the process of redesigning the "systems" of schools and of their own schools. The approach does not make the teacher responsible for coming up with the solution. Rather it provides them with the tools and methods for being able to identify the right problems to address and then uncover the solutions through the process. The teachers are part of an interdisciplinary team, which engages the users and school community in the development of the problem statement and the possible solutions. This approach may address the concerns of Guthrie (2009), Misko (1999) and Billet et al (1999) that trainers have not been involved or feel excluded from the changes and developments that have occurred within the VET sector. It may also help to increase the skills of trainers by enabling them to partner with other trainers and experts who can assist them to develop their skills and find solutions to perceived problems.

Bason (2010) supported this in his identification of the two key benefits of co-creation which he refers to as divergence and execution. The first element of co-creation is an appropriation of design thinking which leads to divergence by creating variation of different ideas and suggestions. Bason emphasised that by including those involved in delivering the solution and those who will be the end user of the solution leads to successful execution as the process of problem and solution includes the people it concerns. Applying this view on this research, the trainers and students need to be included in the practice of reasonable adjustment. Bason further highlighted that employees, especially those on the front-line have knowledge and experience of the end user, which is essential, and they should be included in the process of solution development. The secondary benefit to this approach is involving staff in the ideation and solutions development process builds ownership and creates a greater likelihood of successful execution and implementation. Bason's approach may also address the perceived top down approach of changes that have been implemented into the VET sector. Bason (2010) argued that it is timely for public sector institutions, managers and leaders to look at new ways to lead innovation in the public sector. Bason (2010) suggested that current institutions and policy may have served us in the past but they may not serve us in the global and knowledge connected world of the future.

4.9 Design thinking and empathy

Empathy is referred to as one of the core elements of design thinking and unique approaches and tools used in design thinking. Brown talks about the T-shaped

individual who is able to feel and think, HCD's approach includes the step hear, and IDEO's approach includes the step understand, focusing on the user and developing empathy for them. The ability to have empathy gives the designer greater insight into the needs of the user, the problem and being able to design appropriate solutions. Barnes and Thagard argue that "emotions and inference are both necessary when we empathise with others" (1996). One of the common tools used to develop empathy is the empathy map, developed by Xplane. The use of the empathy map is an accepted tool in design thinking. Furthermore do those who use the empathy map understand how emotions and inference enable people to be empathetic? Understanding if emotions and inference have a role in the development of empathy is important for my research. The ability to transform attitudes and create empathy for people with disability is a key element in achieving a positive outcome in the professional development session.

This section will discuss briefly the background of the process of decisions making, the role of emotions and goals in making decisions and taking action. Then discusses how the effect and influence of decision-making relates to deductive, inductive and abductive thinking. Lastly, empathy is considered with an understanding of decision-making and within the context of design.

4.9.1 The role of emotions in decision making

Barnes and Thagard (1996) propose that despite research that has established strong connection between cognition and emotion there remains an entrenched view of emotions as irrational occurrences that cloud judgement and distort reasoning. Observing what people do, say, think and feel is essential to the design thinking process. Therefore having understanding of how emotions play a role in a person's decision-making could assist those involved in the design thinking process to understand and have greater insight of the end users.

Emotions are indispensable in the process of rational decision-making, Barnes and Thagard (1996) suggests that the rational and emotional processes function together. Research by Barnes and Thagard made connection between the decision-making centres and the emotion centres of the brain. Further to this Barnes and Thagard explain that it is the goals that are held by an individual that enables them to create perspective and understand the current situation in relation to their desired future. This perspective enables the person to compare the relative importance of the current situation in relation to his or her own goals and being able to achieve their goals. The ability of a person to make a decision of importance is based upon the semantic markers that person holds and the emotions that are associated with the events that created those markers. The semantic markers help to signal good or bad decisions based upon previous experience. The markers indicate if this will be a reward or punishment situation.

Barnes and Thagard conclude that without these sematic markers and their connection to the associated emotions decision-making is virtually impossible.

Barnes and Thagard explained that without emotional markers the decision maker becomes stuck in a loop of cost benefit analysis using only the current available information. The lack of a sematic marker means that they cannot make a decision therefore the process will loop. This will lead to the introduction of new or irrelevant information making the process further complicated and lessen the likelihood of a decision being made. The rational and emotional processes function together to achieve the decision. The rational enables understanding of the facts at hand and the sematic markers and associated emotions short cut the process, preventing the process looping by attaching an emotional response to the outcome and the impact of the decision on achieving a goal.

4.9.2 Inductive, deductive and abductive inferences

Inductive, deductive and abductive inferences influence the way people make decisions and learn (Barnes and Thagard, 1996). Education methods commonly address inductive and deductive inferences while design-based approach could provide abductive inference that promotes holistic thinking to complex situations. Inductive and deductive thinking are commonly used and understood models of inference; of making a decision. Hartshorne and Weiss (1998) assert that “deduction proves that something must be; induction shows that something actually is operative; abduction `merely suggests that something may be.” (as cited in Saikaly, 2005 p. 14). Martin (2009) and Brown (2009) have suggested that one of the unique elements of design thinking and the skill of a designer is the use of abductive thinking. “Embracing abduction as the coequal of deduction and induction is in the interest of every corporation that wants to prosper from design thinking, and every person who wants to be a design thinker” (Martin, 2009, p. 68).

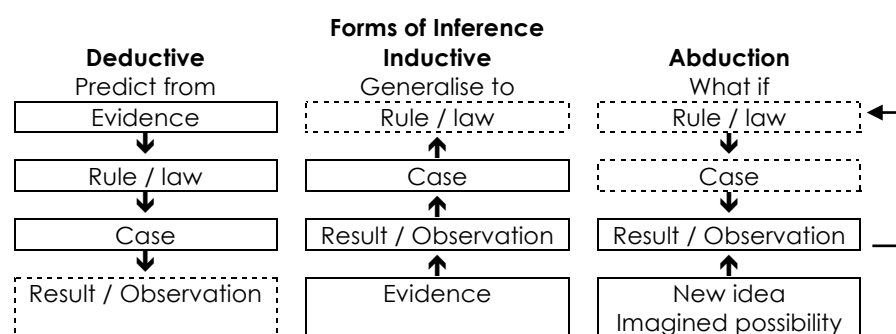


Figure 4.8: Forms of inference adapted from Silverman (2013) and Dunne and Martin (2006)

An abductive inference differs from deduction and inductive inference because it can be considered a best guess. This means that the result can be detached from existing plans and goals. The inference creates a new possibility or a “what

if" scenario. This best guess means that the required actions, plans and goals to achieve this new reality have not yet been created or even envisaged. The possibility of the new context is a new imagined state, value or outcome. This is not a creative leap but more as expressed by Lawson and Dorst (2009) who describe the building of a bridge between the current context (problem) and the future possibility (solution).

So what does this look like in practice? "Abduction does not occur in the context of a fixed language, since the formation of new hypotheses often goes hand in hand with the development of new theoretical terms" (Thagard and Shelley, 1997, para. 10). If the term hypothesis is substituted with a service or product then it is easier to understand how this applies to design. A product that has been created through an abductive process will often result in the creation of a new name or word. This product name could become part of the vernacular based upon the success or notoriety of the product. When brand names become part of the vernacular language, the name describes an entire group of products with a similar function. Products names such as bubble wrap, Jet Ski, escalator, thermos, Popsicle yo-yo, chapstick, Frisbee, Velcro, zipper and band-aid now represent more than the original product name. This is because prior to the product nothing else existed therefore the name describes the function of the product or simplifies the process of describing the product. For example bubble wrap describes the product, whereas Velcro (Velcro.com, 2015) simplifies describing the function of the product. When a substitute product enters the market the original product name is then substituted for describing the group of products that have the same function.

Abduction should not be confused with the idea of wishful thinking as described by Thagard and Millgram (1997) in the context of the effects of goals on inference. Rather, it is the consideration that current thinking, actions, goals, plans and consequential evidence have not been sufficient to resolve, explain or solve the current problem: creating a gap. Therefore, the gap is the impetus to ask "what if" and use this as the new plan, which may not be coherent with current plans. To achieve this new plan those involved would look for evidence and support to create new actions, goals and plans to bring about the new context or reality. Charles Pierce describes this as " the process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea" (as cited in Dunne & Martin, 2006, p. 518)

This process is relevant to emotions and semantic markers. The ability to ask "what if" and the creating of something new could cause an internal conflict for those involved in this process. If there is little or no coherence to existing plans then this will create a rupture to actions and reality. This will in turn cause a decision process to commence, which will result in an emotional response. If the semantic markers are negative then there will be a negative emotional response meaning that the analysis of the new plan will be seen as negative and be dismissed on the basis of

past experience. This leaves those involved in the problem solving process in the same place they started. This gives further relevance to the saying, ““we can't solve problems by using the same kind of thinking we used when we created them””(Mielach, 2012, para. 5).

A facilitator or designer can use this knowledge to break down the barriers they encounter when there is resistance to new ideas or concepts. IDEO embrace this concept within their company slogan “fail early to succeed sooner”. This statement places a positive emotional state on the result of failure. This is in stark contrast to the entrenched societal view that failure is a negative consequence and would be associated with a negative emotional response. One of the strengths of design thinking is the positive value it places on the idea of failure. Ideation and prototyping is not about finding the right answer it is a process of eliminating the ideas that don't work or fit currently. If the designer does not experiment and expand the possible options then the likelihood is that the proposed solution will be only partly successful or in the context of wicked problems, ill fitting. Design thinking attaches a positive emotion to failure and creates the conditions required to make inferences that can become reality outside of the current plans and context. This discussion would propose an adaption of Hartshorne and Weiss (1998) description of abduction (see Figure 4.8) would include imagined possibility and new ideas taken from Pierce as cited in Dunne and Martin (2006). Therefore I would consider; abduction suggests what if there was a new possibility for a new idea for something.

Design learning involved developing the skills required to be able to use and apply design thinking in particular they identified design framing, design process, design knowledge and contextual perspective as required skills. The design framing included the identifying and bridging the what and the how of the problem, understanding the value laden character of framing, applying an abductive approach, and being reflective, emergent, conversational, intuitive and engaged in ‘talk back’ with the problem.

4.9.3 Empathy in design

The discussion above has highlighted the process of decision-making, the role of goals, action and emotions in that process. Therefore the decision making process influences how we see others, situations and new possibilities potentially shaping our openness an ability to be empathetic. Marino's (2013) research *Empathy in design* concluded that empathy is a “complex system with different sub-components, some measurable in a quantitative way” and included the dimensions of *affective and cognitive*. The “affective dimension is the ability to share another's feelings or emotional state” (p. 10) A person can feel empathy for someone who has lost something, for example his or her ability to walk. To create

empathy, the person does not have to have experienced the “actual” loss; rather they can connect with an event of loss in their life that enables them to empathise with the other person’s situation and feelings of loss. This uses the semantic markers connected to events, which have associated emotions so the feeling of loss can be generated by recalling an event of loss. Marino (2013) suggests that people search through their personal archives for similar feelings and activities. The larger the person’s archive the greater the likelihood they can connect with the other person. Marino considers this to be shared representations. Having the ability to connect by using one’s own experience and background. This can have a disadvantage as well as has been demonstrated in the previous discussions a person’s own frames of references and inferences could create assumptions of what they think a person is feeling, thinking and experiencing rather than listening to what others say and observing what they do. Marino then suggests that if we are unable to connect with the other person then the process moves to the cognitive arena.

Marino (2013) defines the “cognitive dimension is the ability to understand another’s emotional state without necessarily sharing their feelings” (p. 11). This is what the design thinking literature refer to as “walking in another person’s shoes”. In this dimension the emphasis is on creating experience that can create understanding and a perspective of the other person’s experience. This includes simulation, role-play, imaging, shadowing and immersion to be able to have access to information to enable the designer to step into the person’s shoes. Marino refers to this as mentalising. It is the ability to infer someone’s emotional state based on how they look, sound or act. This also relates to the discussion about experiential learning and being able to construct new meaning and knowledge from experience.

Marino (2013) asserts that the process of building empathy needs to be balanced, as deep immersion can lead to an overload which could result in the designer’s own emotions becoming confused with those they are observing. This aligns to transformation learning: an overload could result in a change of the designer’s frame of reference to the person they are observing and consequently they are no longer able to view the situation as a third person. Therefore, “self-awareness and emotional regulation” are essential skills for designers to develop (Marino, 2013, p. 12). However the shifting of the designer’s point-of-view is essential for them to be able to understand people who have experiences, life’s, dreams, needs, wants, feelings and emotions that are different to theirs.

What is essential is the designer remaining as both an observer and participant. This will require emotional and cognitive awareness and maturity. This is not a linear system and is a process where by empathy develops over time. Figure 4.9 illustrates Marino’s empathy system showing how the designer may cycle between the affective and the cognitive. Figure 4.9 shows that the designer can move between the affective (sharing) and cognitive (understanding), which can

be enhanced using mentalising and shared representation. The horizon boundary is illustrated in Figure 4.9 as a dotted line. The horizon boundary extends as the designer's understanding of the person and personal experience of working with them increases.

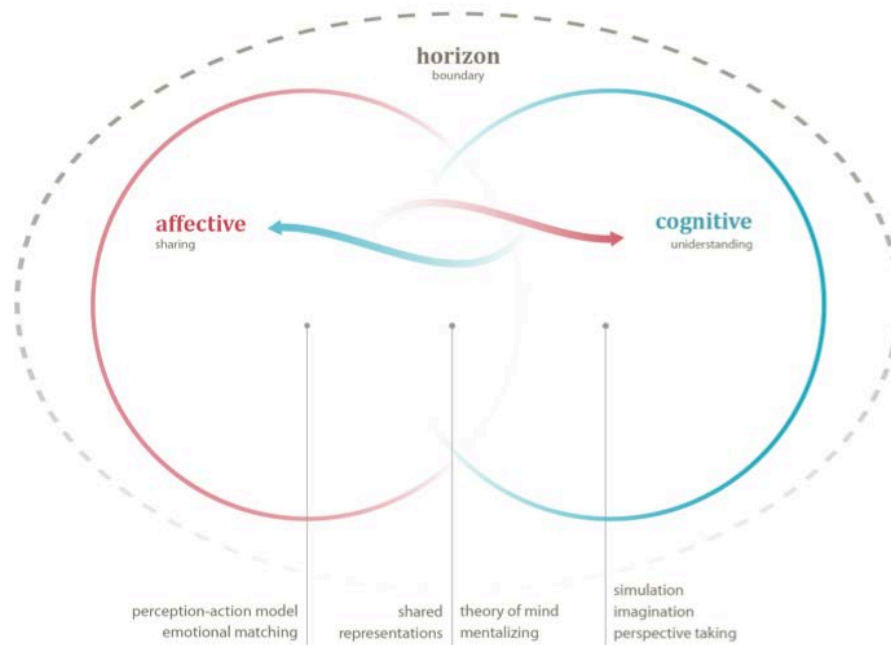


Figure 4.9: The empathy system (Marino, 2013, p. 13)

Marino (2013) suggested that the main triggers for empathy are motivation and willingness to care for another person. These are then combined with the person's own frames of reference, experience, and goals and how these relate to others. The more similar and familiar the other person the easier it is to empathise with them. Empathy can be triggered by an automatic affective response to another person or require the cognitive development, through experience, to create greater familiarity. What is important is the motivation and willingness, as discussed previously. Changing attitudes is one of the key elements of reasonable adjustment. Empathy can be developed and refined. It is supported by other abilities like being a good listener and respect for others points of view. Empathy requires learning that is embedded in transformation, experience and action. The development and use of empathy must support adult learning, it should provide value to the person, and it must have relevance for them and their life.

Marino cites Gilbert (1998) who identified idealism, egotism, realism and circumstantialism as four phenomena that are barriers to empathy (see Figure 4.10). The four phenomena link to the previous discussion of how people make inferences. People reconstruct the evidence to be as they expect (idealism) and want (egotism), or they see it from only their perspective (realism) or ignore what

they do not want to see (circumstantialism). In this case the designer would only be able to meet his or her own needs. Even though they think they are empathising. They are collecting evidence to support their inferences to meet their own goals. Marino recommends that when using empathy in team environments to be aware of the event of teaming and teams that are in conflict. That providing too much information can be over whelming. Allowing enough time for the process. Being aware of the motivation and commitment of the participants, as this will impact the process.

IDEALISM	PEOPLE SEE THINGS AS THEY EXPECT THEM TO BE The lack of evidences to show other information beyond people's expectations may lead them to underestimate or overestimate the situation.
EGOTISM	PEOPLE SEE THINGS AS THEY WANT THEM TO BE Egotism happens when observers are personally invested on specific beliefs, keeping them under any circumstance, and predicting other's behaviors, feeling and experiences based only on that conviction.
REALISM	PEOPLE THINK THEY SEE THINGS AS THEY ARE It is the misinterpretation of others' situation projected from the observer's own perspective. It is very difficult for them to consider the have misinterpreted the information, and if they do so, they tend to believe their inferences were triggered by something in the scene, rather than accepting that they might reach a conclusion based on their own expectations and beliefs. This is a very common mistake of "egocentric children," because they think what they believe is the truth.
CIRCUMSTANTIALISM	PEOPLE THINK ABOUT ONLY THE THINGS THEY SEE This phenomenon refers to the inability to connect information related to others that is not present at that moment in the situation although obtainable. It also relates with failures connecting information we know but for some reason we do not relate it to that specific condition.

Figure 4.10: Roadblocks of empathy, four phenomena described by Gilbert (Marino, 2013, p. 13)

4.10 The constructivist position

Chapter Four discussed how the PD in RA should facilitate a change to adverse attitudes or beliefs; this needs to be achieved as part of the PD design. The research assumes a constructivist paradigm; that a person actively constructs knowledge and truth individually and socially from their perception of "reality" and prior knowledge (Guba & Lincoln, 1994). This reality and knowledge will be referred to as a person's own frame of reference, defined as "something (such as an idea or a theory) that is formed in" (Merriam-webster.com, 2015) a person's mind which includes their point of view and habits of mind (Merriam et al., 2007, pp. 130-137). Design thinking is an active, reflective and nonlinear process, which

can provide new experiences and knowledge enabling participants to build on their existing reality. Providing opportunities for the participants to see their frame of reference through someone else's viewpoint and having empathy for the students can have the benefit of facilitating learning and potentially a transformation of the participant's frame of reference (Merriam et al., 2007, pp. 147-149). This means as the participant does more, experiences more, understands more, and learns more they build upon their previous knowledge and reality; this is a reflective process that would see the participant check if their frame of reference still holds true or needs to be transformed (Guba & Lincoln, 1994).

This constructivist reality exists equally for the researcher, who is the facilitator and a participant in the process; this asserts that the facilitator through the process of inquiry is actively engaged in constructing new knowledge (Guba & Lincoln, 1994). As noted by Manning (1997) the constructivist inquiry should assist all participants to learn about themselves and others; this includes the learning being user centred and a co-creative process. Maila and Pitsoe's (2012) examination of teacher PD through the constructivist lens concluded that it should be systemic, fluid and holistic; giving opportunity to develop new knowledge and beliefs about content, practice and learners. PD should give the participants the opportunity to be a learner and teacher, involve inquiry, reflection and experimentation, be collaborative, connected to their work, and help solve problems related to practice. Therefore design thinking can assist the participants, as it is a problem orientated, user centred, is collaborative, involves experimentation in the form of ideation and prototyping. Noweski et al. whose research Transforming Constructivist Learning Theory into Action confirmed design thinking was able to link the theoretical to the practical and they assert "Design Thinking as constructivist methodology offers teachers the needed support towards a new way of teaching. " (2012, p. 92).

4.10.1 Complex problem to a wicked problem: Is this a wicked problem?

To remove the barriers faced by people with disability in VET consideration should be given to the context of the problem, the barriers that impact people with a disability on an individual level and the issues that exist at a systemic level. The previous section established that the context of VET and CBT has multiple stakeholders, with multiple agendas that are constantly changing. Combined with the legal protection available to people with disability through the DDA and DSE, the changing participation of the individuals involved, the industry area, level of the training, the training environment and the training context, may make this problem worth being considered as a wicked problem.

Rittel and Webber (1973), the first to theorise wicked problems within the context of planning and governing, defined the difference between a tame problem and a wicked problem. A wicked problem is not defined as wicked because it is “evil” but more so that it is cyclic or tricky to solve. A wicked problem is not clearly defined and the solution to the problem may in itself create other problems, hence the cyclic nature. Rittel and Webber further expanded on this concept to articulate ten characteristics of wicked problems:

- “There is no definitive formulation of a wicked problem”(Rittel & Webber, 1973, p. 161): understanding the problem and finding resolutions are intrinsically linked to each other. Without knowing all the solutions it is impossible to know all the problems and visa versa.
- Wicked problems have no stop rule”(Rittel & Webber, 1973, p. 162): the solution may in itself produce further problems. This means that the problem is not fully solved and remains unsolved due to the decision to cease exploration because of time, money or patience.
- “Solutions to Wicked problems are not true-or-false, but are good-or-bad”(Rittel & Webber, 1973, p. 162): the solutions to wicked problems are viewed by those involved based on their own experience and the impact of the solution upon them. This may mean for one group the solution is good whereas an opposing group finds the solution bad.
- “There is no immediate and no ultimate test of the solution of a wicked problem” (Rittel & Webber, 1973, p. 163): a solution to a wicked problem will generate future consequences. These consequences could produce undesirable results that may outweigh the benefits achieved by the original solution and hence it would have been better to leave the problem unsolved.
- “Every solution to a wicked problem is a “one shot operation”; because there is no opportunity to learn by trial and error, every attempt counts significantly”(Rittel & Webber, 1973, p. 163). The impact of solutions need to be measured against there ability to be reversed, the length of time that the solutions ramifications will exist and how many new problems will be created when attempts are made to reverse the solution.
- “Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan”(Rittel & Webber, 1973, p. 164). Solutions rely on the judgment, capacity, trust, credibility and capacity of the group to try the proposed solution knowing fully the possible effects of its application.
- “Every wicked problem is essentially unique”(Rittel & Webber, 1973, p. 164). There are no classes to wicked problems and seemingly similar problems require exponentially different solutions due to context, culture or time.

- “Every wicked problem can be considered to be a symptom of another problem”(Rittel & Webber, 1973, p. 165). Looking at a problem or finding a solution is implicitly related to the level at which the problem is addressed. Addressing the problem at too low a level may create greater complications when trying to solve the problem at a higher level at a later stage.
- “The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution”(Rittel & Webber, 1973, p. 166). The discrepancy will be explained by the viewers own “world view” and will be rationalised to best meet their own need.
- “The planner has no right to be wrong”(Rittel & Webber, 1973, p. 166). Unlike proposing hypotheses which can be proven right or wrong with either being an acceptable result. The nature of wicked problems, within the context of planning, means that proposed solutions have ramifications that cannot be easily reversed and hence the immunity of getting it wrong is not often tolerated.

Rittel and Webber proposed wicked problems at a time when there was not the complexity of globalisation, the connectivity and access to information that we have today. However they echoed the same concerns, “as the sheer volume of information and knowledge increases, as technological developments further expand the range of options, awareness of the liberty to deviate and differentiate spreads” (Rittel & Webber, 1973, p. 167); their concerns and realisations still have relevance today. The complex relationship described by Rittel and Webber that existed between striving for equality and respecting the different values that exist in the community creates complexity when making decisions. One person's values and concept of equality may be completely opposite to another person's values. This means that any decision that a person makes on behalf of or for another person may inadvertently remove another person's equality. Therefore making decisions that are right for individuals versus what is good for the whole community, comes into conflict because whose measure of what is right and what is good will be used.

Rittel and Webber (1973) argued that the concept of and striving for liberty and equity for individuals in the community creates more minority groups. More minority groups means the need to consider a greater diversity of values, interests, needs, opinions, freedoms, and equity issues. These new liberties and equalities led to the “community” questioning the ability, thinking, reasons and practices of those making decisions that affected their community, in particular the “professionals” and “politicians”. These communities with their new liberty and voice wanted to be a part of the solution; the needs of a community had become political. People do not want to be planned for, planned around or planned at, people want to be able choose, be consulted, included, heard and planned with; empowered and powerful. Rittel and Webber were predicting the

slow death of the professional expert who knows best, works for the good of all, protects the public interest, has the ability to see the problem and provide the solution. Rittel and Webber realised that there is no one individual within the system that did not have some interest in the problem; a complex web of competing interests. How could these same people, with invested interests, provide the solution? Rittel and Webber suggested that the thinking of yesterday was too rigid and too simplistic to meet the needs of the new world.

Buchanan argues that the wicked problems approach proposed by Rittel and Webber and later counter parts was "only a descriptive social reality of designing" not a "grounded theory of design" (1992, p.16). Buchanan suggested that design problems are "indeterminate and wicked" because design does not have its own subject matter instead the subject is created by the designer (1992, p.16). As such Buchanan advocated that the subject matter of design had universal scope that could be applied to any area of human experience. Therefore the "designer must discover or invent a particular subject" of enquiry based upon the problem and it's context (Buchanan, 1992, p.16). This is in contrast to the scientific approach "which is concerned with understanding the principles, laws, rules or structures" of an existing subject matter (Buchanan, 1992, p.16). This could require the designer "to conceive and plan what does not yet exist"(Buchanan, 1992, p.18). Buchanan suggests that this may seem impossible to those who are more linear in thinking. However it may only be a "limitation of imagination that can be overcome by better design thinking" (1992, p.21). Buchanan considered that design thinking was not "directed toward a technological "quickfix" in hardware but toward new integration of signs, things, actions, and environments that address the concrete needs and values of human beings in diverse circumstances" (1992, p.21).

The concept and existence of wicked problems has slowly infiltrated academia, government and industry. There is a clear delineation between a wicked problem and a tame problem. Crouch & Pearce (2012) commented that a wicked problem is resistant to any kind of solution while a tame problem is more likely to have a positive outcome when a solution is proposed. They concluded that tame problems sit within wicked problems thus giving greater understanding of the complexity of the interrelationship of problems (2012, p. 25).

In 2007 the Australian Public Service Commission (APSC) recognised and discussed the concept of wicked problems in the publication of Tackling Wicked Problems: A Policy Perspective. The APSC (2007) defined the characteristic of wicked problems as:

- Wicked problems are difficult to clearly define
- Wicked problems have many interdependencies and are often multi-causal
- Attempts to address wicked problems often lead to unforeseen consequences

- Wicked problems are often not stable
- Wicked problems usually have no clear solution
- Wicked problems are socially complex
- Wicked problems hardly ever sit conveniently within the responsibility of any one organisation
- Some wicked problems are characterised by chronic policy failure.

Before we seek to find solutions for a problem there should be a conscious effort to understand where it exists and in what context it appears. Therefore part of knowing the problem would be to understand and identify if the problem is tame or wicked. The understanding of the problem within the concept of being “wicked” or “tame” will significantly influence the method used to find a solution, the possibility of finding a solution and its subsequent outcome. The Figure 4.11 illustrates that the problem that I seek to find a solution to meets the characteristic of a wicked problem as identified by the APSC. This further validates that this problem should be categorised as a wicked problem. The acknowledgement and acceptance of this classification means we can now move forward to look at possible ways to find a solution to this problem. Ney (2012) identified that there needs to be new approaches to resolving these problems and a recognition that the previous methods and tools were out-dated and ineffective.

APSC Wicked Problem Characteristics	Is this present in CBT in VET sector?
Wicked problems are difficult to clearly define	Yes - The barriers faced by people with disability are not easily defined and are multidimensional and individualised.
Wicked problems have many interdependencies and are often multi-causal	Yes - The issue is not related to one party or organisations and has multiple policy, legislation, Acts, Standards, Government and Industry interdependencies
Attempts to address wicked problems often lead to unforeseen consequences	Yes - The introduction of VET reforms and CBT have had unforeseen consequence which were further compounded by new Acts and Standards.
Wicked problems are often not stable	Yes - The VET sector is in constantly changing to meet the needs of Industry, Government, Policy, Legislation, Acts and Standards.
Wicked problems usually have no clear solution	Yes - The problem being the “barriers” are not the same for each person rather they are unique to each person and context.
Wicked problems are socially complex	Yes - This problem creates further social problems in particular access to employment and social inclusion and social and community value role.
Wicked problems hardly ever sit conveniently within the responsibility of any one organisation	Yes - The VET sector is not the responsibility of one organisation or industry and has significant government regulation and perceived

	interference.
Some wicked problems are characterised by chronic policy failure.	Yes - There were multiple agendas behind the introduction VET reforms beyond creating a "clever" country.

Figure 4.11: APSC Wicked Problems Characteristics aligned to current problem.

4.10.2 How to find solutions to Wicked Problems

There are multiple factors of why problems remain unsolved. However one key factor is that "we can't solve problems by using the same kind of thinking we used when we created them"(Mielach, 2012, para. 5).

Ney and Verweij identified "that the complexity and fluidity of wicked problems precludes finding a single, correct solution"(2014). To support this statement Ney and Verweij (2014) drew evidence from cultural theory that states "any forms of governance that attempt to impose a single way of organizing, perceiving and justifying on a particular social domain are bound to fail"(p.4). Ney and Verweij advocate the use of "clumsy solutions" that embrace pluralism therefore avoiding the potential pitfall of the "correct solution"(2014). This embraces Rittel and Webbers observation that if a wicked problem is over analysed and conceptualised at the problem clarification stage, the process steps into solution creation. This is because the clarification stage creates criteria based on judgements of what is or is not good, bad, right, wrong, present or not present. Rather wicked problems need to be approached by immersion rather than classification (1973). Wicked problems are complex and multidimensional; therefore trying to solve them would invite the consideration of new or innovative approaches.

Ney and Verweij (2014) using the perspective of cultural theory concluded that to be able to produce clumsy solutions decision making processes that incorporate hierarchy, egalitarianism, individualism and fatalism and support the concept of the hermit are potential generators of clumsy solutions (Figure 4.12).

Model	Description
Egalitarian	Participation is a choice, includes being empathetic and listening to others, should held in a public place, endeavours to reduce or remove the perspective of power of individual participants and uses simple technologies. The objective is honest deliberation by all those involved, which considers the greater good or public interest over their own private interest that leads to consensus.
Hierarchical	The use of experts to steer, mediated and formalise the outcomes of interactions between the stakeholders. The process is design and controlled by experts. The outcome is a report or policy that is formulated by the experts from the data collected from these interactions, which is then imposed upon

	those organisations, or people involved.
Fatalistic	The generation of solutions is by accident via a random or haphazard process, they cannot be planned for or willed into being. The competition for time, power or position means that people are more concerned with their individual outcome over that of others thus solutions come as part of "muddling through" or small changes.
Individualist	The voluntary involvement of individual stakeholders to develop solutions based upon their own perspective and ideas. It uses competition, bargaining or majority voting processes to determine the superior solution, which can result in rewards for those with actionable outcomes. It is proposed to be an efficient and fast method of solutions generation.
Hermit	Enabling stakeholders to temporarily distance themselves from the usual social context and bias when engaged in the consideration of a problem or making decisions about a problem. The desired outcome is open mindedness and being able to see through other perspectives.

Figure 4.12: Five elements that predict of clumsy solutions adapted from Ney and Verweij (2014)

Ney and Verweij (2014) applied this criterion to 20 possible approaches and identified six that would most likely facilitate the development of "clumsy solutions", which they categorised as "messy institutions"(see Figure 4.13).

Method	Description	Outcome
Citizens Juries:	Citizen Juries are made up of randomly selected citizens who represent the demographic of the community. The jurors participate in a process that informs them, via experts, on the topic, they deliberate on the topic as a group and then provide recommendations about future considerations or actions. <ref>	This process is designed to engage citizens in a topic where the process or decision-making is seen to be undemocratic. <ref>
Deliberative Polling:	Deliberative Polling is a consultation process that combines questionnaires, focus groups and plenary sessions. People are selected randomly to participate. The participant's opinions are taken before and after they have been given information and heard the thoughts of other people. (Participedia.net, 2015)	The process was designed to develop a hypothetical opinion of what the public may think of a particular topic or issues. (Participedia.net, 2015)
Design Thinking:	Design thinking is an interdisciplinary problem solving approach that is user and human centred. People are selected as active participants in the process. The participants solve user problems by researching the users to gain insights, they then propose and develop solutions through a process of ideation, prototyping and implementing.	The process designed to identify user problems and then create, test and implement identified solutions.
Future Searches:	A Future search is a meeting that brings together decision makers and those affected by those designs to agree upon a plan of action. The participants	The process is designed to create an agreed action plan that can be implemented for an organisation, community or

	examine the past, present and future to develop an agreed action plan.	network of people.
Planning Cells:	A Planning cell consist of 25 people from varying backgrounds who work in small groups to create a variety of solutions for predefined problem. The solutions are assessed and prioritised by the whole group and a final report is presented to the commission body.	The process is designed to create a report that contains recommendations or proposed solutions to a predefined problem.
21st Century Town Meetings:	21st Century Town Meetings consist of ordinary citizen who do not have expertise in the subject or topic. The meeting consist of a minimum of 500 people who discuss the topic in small groups of less than 12 people. All group data is brought together to form a main view or themes from all groups which are then converted to a report which is distributed to participants, decision makers, and the media.	The process is designed to create a report that contains recommendations and results to a predefined problem.

Figure 4.13: The six messy institutions as proposed by Ney and Verweij (2014)

Each of the methods in Figure 4.13 presents a value and quality that are appropriate in different situations. Figure 4.13 demonstrates that the primary outcome of design thinking is the creation and implementation of a solution by those involved, the primary outcome of the other five methods is a report that is given to others.

Hierarchy	Design thinking is a process that has structure with a driver or facilitator that ensures the team stays on task and on track
Egalitarianism	Design thinking is user focused which embraces the concept of "walking as" or "seeing as" the user.
Individualism	Individualism is embraced within design thinking. An individual's role is important but it is not based on seniority or formal qualifications it is determined on the individual's ability to achieve the outcome as part of the team.
Fatalism	Failure is embraced from the limited time frames to ideation and prototyping attempts that value failure as a learning and development process.
Hermit	Techniques and tools used within design thinking assist in objectivising user experience, like empathy maps. The process also encourages reflection and learning.

Figure 4.14: Design Thinking as "messy institution" in relationship to the 5 concepts adapted from (Ney & Verweij, 2014, pp. 15-16)

The direct relationship of design thinking to the five concepts of "messy institutions" as identified by Ney and Verweij can be clearly seen in Figure 4.14. The authors however heed caution in the acceptance of their assessment without recognising that the success of the process is also relevant to the "creativity, cunning, reflexivity and improvisation skills of those involved, as well as the

informal, unspoken rules that influence the proceedings”(Ney & Verweij, 2014). Furthermore the author's analysis and conclusions are based upon the review of relevant literature. Their conclusion is a theoretical framework requiring empirical research of the application of these “messy institutions” in the development of “clumsy solutions”(Ney & Verweij, 2014).

My research explored the roles of design thinking, as a PD method and tool, to address the barriers experienced by people with disability in VET. This is theoretically supported by the literature reviewed. Design thinking has been successfully used in educational settings as a methodology for enabling teachers to address problems and create innovative solutions within the school environment.

Section Two: Summary

The thread running through this chapter and previous chapters is the absolute importance of people and their frames of reference in the context and problem of RA. This was interlaced with the realisation that this is a human problem of attitude. To understand how to change attitude and frames of reference adult, transformational, experiential and action learning were reviewed. While design thinking has the potential to support these different forms of learning, there should be willingness and openness of those involved in the process. Therefore examination of design, design thinking, designerly thinking led to the conclusion that design thinking is an activity that is multidimensional and involves more than a simple set of tools and methods. This highlighted that the process of problem solving is messy. This messiness is due to the combination of context, the stakeholders involved and the way that emotions, goals and action influence the decision making of those involved. The discussion extends with an understanding of empathy and how empathy is influenced by the person's decision-making processes and experience. Finally it is proposed that the problem of RA be considered as a wicked problem and as such design thinking is identified as one possible mechanism to produce creative adjustments.

If design thinking is to be used in the process of creating ways to address wicked problems, then it is essential that the people involved in design thinking can identify, understand and if required change their frame of reference, point of view and habits of mind. The inclusion of participants who are aware of how they use their points of view and habits of mind to interpret new knowledge and data would bring benefits to design thinking, those involved and the solutions created. This awareness would allow them to declare their biases, judgements, associations, assumptions, values, and feelings towards the problem. Raising their awareness could help to identify when they are providing a conditioned habitual response to and their investment in the problem and its solution.

If design thinking is to be used to address wicked problems with a democratically and morally principled approach that can have transformational effect on the world, then understanding how design thinking can support change in individuals and society would seem to be essential. Brown (2009), Bason (2010), IDEO and Vianna et al (2012) identify a key element of design thinking is having empathy and understanding for those affected by the problem. If design thinking is to redefine the role of the designer from the design of things to solving wicked problems, then an understanding of how learning can create transformation for individuals and how individuals develop empathy is important to the designer, design thinking facilitator and design thinking. This section was essential in creating an understanding and foundation when considering how can design thinking be

applied as a professional development training methodology for VET Trainers in the area of reasonable adjustment.

Section Three: Method and process

Chapter Five: Conceptual Framework

5.1 Designing the PD session

The research aimed to explore and apply design thinking as a professional development approach to create a greater understanding and awareness of reasonable adjustment in the delivery and assessment of training for students with disability within the VET sector. The literature identified that people with disability have employment rates well below people without disability and that this is linked to poor educational outcomes. Reasonable adjustment can be one possible tool for increasing educational outcomes for people with disability. Current literature provided to VET practitioners about reasonable adjustment such as Reasonable Adjustment in Teaching, Learning and Assessment for Learners with a Disability by the Queensland VET Development Centre Strategy and Research (Equity) provide guidelines of what could be done (2010). However the guide does not provide a process or methodology for defining, creating, implementing and reviewing reasonable adjustments. The guide does suggest that inclusive practice; universal design and a learner centred approach should be guiding principles to the development of reasonable adjustments. These principles are similar to those used within the design thinking methodology.

5.1.1 Review of design thinking models

There are many design thinking models that have been published and applied by various design philosophers, design companies and councils. For example the Human Centred Design Toolkit (IDEO, n.d.), Acumen HCD Workshop (Acumen Fund, n.d.), Design Thinking Business Innovation (Vianna, Vianna, Adler, Lucena, & Russo, 2012), Design Thinking (Cross, 2011), Design Thinking for Educators (IDEO, 2011), Basic Design 08 Design Thinking (Ambrose, 2010), Double Diamond (Design Council, 2015), IDEO (Myerson, 2001), Leading Public Sector Innovation (Bason, 2010), Service Design (Stickdorn & Schneider, 2011), Collective Action Toolkit (Frog, 2013), Bootleg Bootcamp (dschool, n.d.), Business Model Generation (Osterwalder, Pigneur, & Clark, 2010) and Design For Growth (Liedtka & Ogilvie, 2011). These models were developed to tackle different challenges and needs in varying situations. Figure 5.1 shows substantial overlaps between the design thinking processes of the 15 models reviewed when the processes are grouped into the researcher's five design thinking phases.

Model	Steps in process						
Human Centred Design Toolkit (IDEO, n.d.)	Hear	Create	Deliver				
Acumen HCD Workshop (Acumen Fund, n.d.)	Discover	Ideate	Prototype				
Design thinking - Business Innovation (Vianna, Vianna, Adler, Lucena, & Russo, 2012).	Immersion	In-depth Immersion	Analysis and synthesis	Ideation	Prototyping		
Design thinking (Cross, 2011).	Quantify problem	Generate concepts	Refine concepts	Select a concept	Design	Present	
Design thinking for Educators (IDEO, 2012)	Discover	Interpretation	Ideation	Experimentation	Evolution		
Basics Design 08 Design Thinking (Ambrose, 2010)	Define	Research	Ideate	Prototype	Select	Implement	Learn
Double Diamond (Design Council, 2015)	Discover	Define	Develop	Deliver			
IDEO (Myerson, 2001).	Observations	Brainstorming	Rapid Prototyping	Refining	Implementation		
Leading Public Sector Innovation (Bason, 2010)	Knowing	Analysing	Synthesising	Creating			
Service Design (Stickdorn & Schneider, 2011).	Exploration	Creation	Reflection	Implementation			
Collective Action toolkit (Frog, 2013)	Seek	Imagine	Make	Plan	Build		
Boofig Bootcamp (dschool, n.d.)	Empathize	Define	Ideate	Prototype	Test		
dschool (dschool, 2009)	Understand	Observe	Point of view	Ideate	Prototype	Test	
Designing for growth (Liedtka & Ogilvie, 2011)	What is?	What If?	What wows?	What works?			
Business Model Generation (Osterwalder, Pigneur, & Clark, 2010)	Mobilise	Understand	Design	Implement	Manage		

Figure 5.1: Design thinking models

While these models have different number of phases, there are similarities across them all. The following describes the researcher's concept of each of the five phases:

- Context or problem framing phase (light grey in colour): The framing phase investigates and develops an understanding of the context and the problem.
- Ideation generation phase (orange in colour): The ideation phase develops and documents ideas that can assist in providing a solution or lessens the impact of the context or problem.
- Prototyping phase (green in colour): The prototyping phase creates an example or prototype of the solution to enable experimentation and further development of the solution.
- Implementation phase (blue in colour): The implementation phase is about planning for and implementing the solution to enable testing and collecting of feedback by the users about the proposed solution.
- The reframing phases (dark grey in colour): The reframing phases is used to check the validity of or changes in thinking, identify shifts or changes in focus, monitor changes in the context or problem and ascertain learning progress or needs.

The grouping of the process from the 15 models in Figure 5.1 reveals that the framing phase contains 26 processes, the ideation phase contains 16 processes,

prototyping phase contains 13 processes, the implementation phase contains 12 processes and the reframing phases contains 3 processes. The larger number of processes in the framing phases would indicate that the reviewed models have a primary focus of investigating and understanding the problem and the context as an essential phase of design thinking. The number of processes decreases as the phases move from framing through to implementation this would indicate the narrowing of the data and a synthesis from an idea into a solution. The decrease in the number of processes could also indicate the perceived decrease in the complexity of the data and required synthesis of the later phases of design thinking. The reframing phase contains the least number of processes with only three of the 15 models containing a process that could be grouped into reframing such as learn, evolution or manage.

5.1.2 The design thinking model applied to the research

The review of the design thinking models revealed that design thinking models are for explaining and using design thinking for particular purpose, context or problem. Therefore, to use design thinking effectively as a PD method the model should be able to support learning, the development of empathy, demonstrate the development of a practical outcome to a RA problem and a capacity to be applied in the VET context. The design thinking models reviewed assume learning as part of the process or in the case of the model proposed by Ambrose (2010) at the end of the process. The process of learning is essential to PD and therefore should be one of the primary focuses of the design of the design thinking model.

For the purposes of this project, I have developed a design thinking model that emphasises learning and empathy. Figure 5.6 shows the design thinking model developed for the PD, which includes the framing, ideation, prototyping, implementation and reframing phases. This model has a focus at the centre. The focus could be a problem, context or need. The focus for design thinking as a the PD method is to enable participants to:

- Develop an understanding of RA by developing empathy for students with disability.
- Identify an RA problem for a person with a disability.
- Develop and implement a solution to the RA problem.

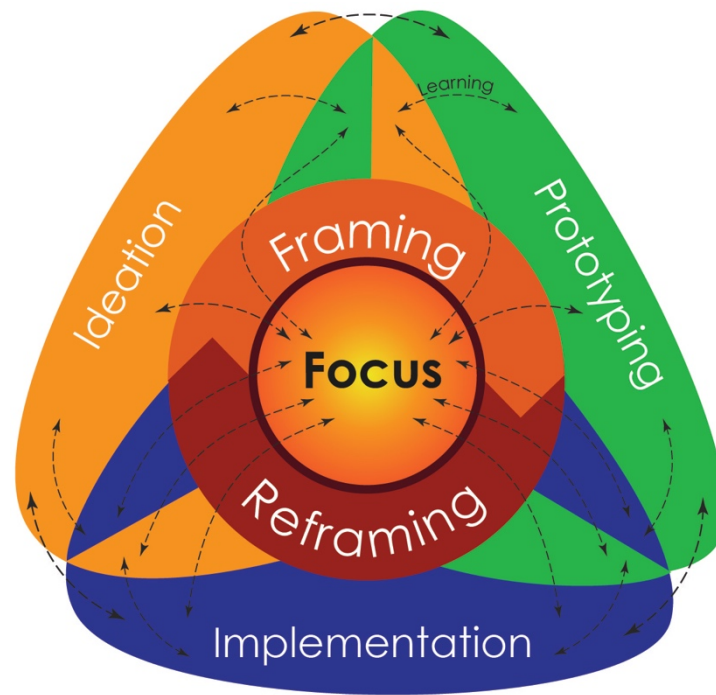


Figure 5.6: Framing / Reframing Model of Design thinking

Figure 5.6 illustrates how learning occurs in the model. Learning is an essential element of PD therefore the process of learning is included as part of the design thinking model for the research. The design thinking model (Figure 5.6) demonstrates participants learning during the;

- Framing and reframing phases as a process of reflection upon their knowledge and understanding of the focus.
- Ideation, prototyping and implementation phases they can refer to and from the focus or to another phase using the knowledge and understanding that that has developed in each of the phases.

The design thinking model developed for the PD session embodies the idea that “we can’t solve problems by using the same kind of thinking we used when we created them” (Mielach, 2012, para. 5). The design thinking model includes the framing and reframing phases circling around the focus as shown in Figure 5.6. This part of the model recognises the need for participants to reflect upon their existing frames of reference, knowledge and understanding of the focus of the design thinking activity. Using framing and reframing empathy can be developed by challenging participants current thinking by using tools and methods that require them to reflect upon or see the focus from another point of view. The process of framing and reframing may also lead to a change in the focus. For example if an assumption is made about why a problem exists in the context or problem; like a person’s capabilities. The process of framing and reframing can be used to test and valid if that assumption is valid and real. If the assumption is seen

to be invalid then when it is removed it can remove or reduce the problem. This can then create a shift in focus within the context or problem.

The majority of the design thinking models reviewed were illustrated as being a linear processes. The linear nature of these models creates a perception that design thinking is a simple process of progressing through the phases in order. However design thinking is not a linear or a simple ordered process. Therefore this model is envisaged as cyclic rotating around the focus and uses the phases in cycles that are overlapping and intertwined. For example, in the ideation phase it can be seen in Figure 5.6 that this phase includes:

- Prototyping and implementation as minor elements allowing for existing understanding and knowledge about these elements to be used and challenged when developing ideas
- Reflection to and from the focus and uses framing and reframing to ensure that idea development is still aligned to the context and problem identified before, during and after the phase.
- Reflection to and from the focus also allows for checking the thinking and possible bias or assumptions that are in use.
- Links to the major phases of prototyping and implementation means that ideation phases can be repeated if the initial ideas proposed cannot be successful prototyped or implemented.

The same relationships apply to the prototyping and implementation phases. The model also takes into account that the development of solutions to wicked problems often leads to the creation of new problems. The reframing phase engages the participants involved in the design thinking activity the opportunity to reflect upon how ideas, prototypes, implementation and the final solution to a problem impacts the users or context. The reframing phase is used to check the validity of or changes in thinking, if there has been shift in focus, context or problem, what changed in the context or problem and identify if there was new learning or required learning. The reframing phase includes the processes that apply when investigating and understanding the context and problem during the activity of design thinking and after the implementation of the solution. This includes developing insights about the solution and the problem, identifying new problem/s or creating improvements or modifications to the solution based on feedback. Most importantly the model recognises the fluidity and changing nature of problems and the context, and the changes that will occur in the participants.

5.1.3 Review of design thinking tools

The design thinking methods and tools used in the PD session were selected based on the appropriateness to the context. There are many design methods and tools available. The selection decision was made with careful consideration of the purposes and characteristics of the method's or tool's ability to achieve the outcomes for the PD session. The methods and tools were selected from a review of the methods and tools used in seven design thinking models, the IDEO Method Cards (2003) and the book 101 Design Methods (Kumar, 2012). Figure 5.7 provides an indication of the total number of tools and the number of tools used in each of the design thinking phases from each of the resources reviewed. Figure 5.7 illustrates that a total of 310 tools were used of which 190 were used in the framing phase. As the phases move from framing to implementation the number of methods or tools used decreases. The decreasing number of tools used in each phase mirrors the decreasing number of processes in each of the design thinking phases.

	No. Tools	Framing	Ideation	Prototyping	Implementation
Model					
Human Centred Design Toolkit (IDEO, n.d.)	38	21	11	1	5
Method Cards (IDEO, 2003)	51	43	8	0	0
Design thinking for Educators (IDEO, 2012)	12	7	1	3	1
101 Design methods (Kumar, 2012)	99	65	10	12	12
Design thinking - Business Innovation (Vianna, Vianna, Adler, Lucena, & Russo, 2012)	26	16	4	6	0
Leading Public Sector Innovation (Bason, 2010)	25	15	3	3	4
Service Design (Stickdorn & Schneider, 2011)	24	12	13	0	0
Business Model Generation (Osterwalder, Pigneur, & Clark, 2010)	35	11	13	9	2
Total	310	190	63	34	24

Figure 5.7: Design thinking tools

The design thinking model in Figure 5.6 highlights the focus, framing and reframing as the central elements. Figure 5.7 shows that the majority of methods or tools used in the reviewed resources are used in the framing phase, which includes identifying the problem or need, building understanding and empathy for the users and stakeholders. The framing phase is a key element of the PD and it should allow participants to develop empathy for and have positive attitudes about people with disability. The development of empathy will assist them to have an

understanding of RA, learn how to apply and implement RA in the training environment.

The methods and tools selected for the PD session need to:

- Generate empathy for students with disability,
- Provide insights into the barriers for students with disability in VET
- Provide solutions to those barriers
- Provide learning opportunities for participants.
- Engage the participants in reflection and discussion
- Engage participants in design thinking

The tools and methods selected for the PD session are shown in Figure 5.8. The methods and tools in Figure 5.8 have been grouped into the design thinking phases and provides a description about each tool or method. The use of a method or tool is not restricted to a single phase as demonstrated in Figure 5.8. This is important as it draws attention to and recognises the difference between a method or tool and the theoretical elements, the phases, of design thinking. The initial phase column in Figure 5.8 indicates the first phase the method or tool would be used in and the secondary phase/s column indicates what other phases that method or tool could be used in.

Tool / method	Initial Phase	Secondary Phase/s	Description
Brain writing	Framing	Ideation	Brain writing is a focused activity, usually an individual activity, designed to produce a range of ideas or data on a defined subject or topic. It can be done as a written, drawn – writing or drawing on to post-it-notes or onto a sheet of paper. This is a good icebreaker warm up exercise. (Jackson & Buining, 2010)
Journey / process map	Framing	Prototyping	A map that highlights and identifies the services users experience and the touch points a user has with a service. These journey maps can be recorded using notebooks, virtually, video, audio or photography. The maps work best if there is an association with a journey story and personas for the users to allow for the development of empathy. (IDEO, 2003; Stickdorn & Schneider, 2011)
Personas	Framing	Ideation Prototyping Implementation Reframing	Personas are insights and characteristic of a group or individual user. A persona provides an engaging representation that allows those involved to be able to identify with the person, understanding their needs and seeing their point of view. (Stickdorn & Schneider, 2011)
Theme clustering	Framing	Ideation Prototyping Implementation Reframing	Theme clustering allows for the data that has been gathered to be sorted and arranged. Clusters can be created from single set of data or by combining multiple sets of data together. The objective is to identify themes or

			commonalities that appear in the data to provide insights into the users, context or problem. For example for activity it may be that clustering in themes of when and where may create insights. (Kumar, 2013; IDEO, n.d.)
Stories (video)	Framing	Ideation Implementation Reframing	Stories are similar to personas. They provide an insight into a person's life or group's or situation. They should be used to view, understand the background, interests, motivations, frustrations, interactions and personal data. Stories can be a starting point for further investigation or used to highlight a issue, view point or provide as an example. They are not about interpretation; they can be collected in writing, audio, video, photographs or a combination. (IDEO, 2012)
Venn Diagram	Framing	Ideation Prototyping Implementation Reframing	Allow for data, groups, problems or contexts clusters to be analysed in the way that they overlap. Venn diagrams can have 2 to many of overlapping clusters. (Kumar, 2013)
Two by two / matrix	Framing	Ideation Prototyping Implementation Reframing	A two by two or matrix is similar to theme clustering. The clusters are organised into themes or dimensions based upon those most relevant, which create quadrants. They can be used to discover insights or make decisions. (Vianna, Vianna, Adler, Lucena, & Russo, 2012; Liedtka & Ogilvie, 2011)
Relationship / stakeholder map	Framing	Prototyping Implementation Reframing	Stakeholder maps can be in various forms from a Venn diagram, circles of interactions or a mind map. The important factor is that map identifies the stakeholders, the relative importance, the interrelationships and connectedness of the stakeholders. (Stickdorn & Schneider, 2011; IDEO 2012)
Empathy Map	Framing	Implementation Reframing	Organises data collected in an immersion phase, observations or interactions with user. Data is sorted into what the user or stakeholder says, does, thinks, feels or hears, sees, feels or thinks. It can also include the pain and gain associated with the need or context. This may help to understand behaviour, concerns and goals of users. Example the XPLANE empathy map (Stickdorn & Schneider, 2011; Osterwalder, Pigneur, & Clark, 2010)
Affinity diagram	Framing	Ideation Prototyping Implementation Reframing	Grouping insights or elements intuitively in to similar affinities, similarities, proximity, interdependencies or dependency. It enables data to be presented at the macro level and then be broken into micro level or subdivisions showing relationships and opportunities for innovation. (Stickdorn & Schneider, 2011; IDEO, 2003)
Defining insights	Framing	Ideation Prototyping Implementation Reframing	This is away to create a point of view or refining the insights that have been discovered into statements or questions. This can been done as a statement like user + need + interesting learning =POV, POINT = problem, obstacles, Insights, needs, themes, using headlines statements, or posing questions like "how might we...? or What if...?. The objective is to create actionable insights for the ideation phases. (IDEO, 2012; IDEO, 2011, IDEO, n.d.)
Brainstorming	Ideation	Ideation	Brainstorming is a focused activity, usually in a

		Prototyping Implementation Reframing	group, designed to produce a range of ideas or data on a defined subject or topic. It can be done as a verbal, verbally calling out ideas or as a written – writing on to post-it-notes. There is a structure and rules to successful brainstorming. (IDEO, 2012)
Service Models blueprints /diagrams	Prototyping	Implementation Reframing	This is blueprint or model of a proposed service. The model should have enough detail to allow it to be applied and implemented in practice, ideally it would allow for the marinating and ongoing development of the model. (Stickdorn & Schneider, 2011)
A role play	Prototyping	Implementation Reframing	The role-play is a simulation of an event, service or situation by the users, stakeholders or design team. This allows for the testing and refining of the idea or prototype (can be used for framing and reframing). (Stickdorn & Schneider, 2011)
Prototyping materials	Prototyping		Prototyping can be complete to build a 3D and 2D models of products or services. The material can vary from cardboard, masking tape, pens and paper to high tech 3D printed prototypes. The objective is to get the idea into material form so that it can be experimented with and provide further feedback and refinement. (IDEO, 2003; IDEO, 2012)
Mock-ups	Prototyping		Are either physical or electronic mock-ups of digital services or products like websites or apps. The mock-up allows the users or/ and design team to build quick prototypes that allow the investigation of concepts, flows and usability. (IDEO, 2003)
Prototype Testing	Prototyping Implementation	Implementation Reframing	These are data collection techniques like observations, Feedback, user testing, used during prototype testing or during implementation. These can be used to further develop the prototype or may be used to reframe the problem if the solution is not usable, viable or desirable. (Osterwalder, Pigneur, & Clark, 2010)

Figure 5.8: Design thinking methods and tools

The proposed design thinking model Figure 5.6 does not prescribe the methods or tools to be used in each phase. Figure 5.9 provides an overview of the design thinking phases and the tools that will be used in each phase. The methods or tools in each of the phases were selected to achieve the objective of the phase in regards to the PD outcome. This outline was developed prior to developing the workbook for the PD session.

Phase	Description	Tools
Framing	<p>This phase creates a frame that allows a focus to be applied to the problem.</p> <p>Defines the; Context</p> <ul style="list-style-type: none"> Individual, local, community, work, national, global <p>Stakeholders</p>	<p>Method and tool selection should:</p> <ul style="list-style-type: none"> Build understanding Create / collect data Build empathy <p>Tools:</p> <ul style="list-style-type: none"> Empathy Map

	<ul style="list-style-type: none"> • Users and other stakeholders <p>Perceived problem/s</p> <ul style="list-style-type: none"> • Clarify the problem from the initiators point of view <p>Through investigation and observation collect data to form a deep understanding of the:</p> <ul style="list-style-type: none"> • Users • Stakeholders • Context • Problems • Assumptions • Points of view <p>Use collected data to create insights into;</p> <ul style="list-style-type: none"> • User needs / wants / goals • Stakeholder needs / wants / goals • Problem/s statements 	<ul style="list-style-type: none"> • Affinity Diagrams • Personas • Stories • Insight maps • Problem statement maps
Ideation	<p>Ideation is the divergent and convergent phase of creating ideas for problem statements.</p> <p>Divergent Step During this phase brainstorming is used to create solution ideas. In the ideation phase quantity, creativity, what if and build on is encouraged. The objective is to produce as many ideas as possible.</p> <p>Convergent Step In this phase ideas are sorted and categorised Ideas are then reduced to those considered viable, feasible, desirable and usable.</p>	<p>Method and tool selection should:</p> <ul style="list-style-type: none"> • Should generate ideas • Be non-judgemental in the divergent phase • Be selective in the convergent phase <p>Tools:</p> <ul style="list-style-type: none"> • Mindstorming • Brainstorming <p>For sorting ideas:</p> <ul style="list-style-type: none"> • Affinity Diagrams • Venn diagram • Two by Two
Prototyping	<p>The prototyping phase has two approaches rough and rapid or minimum-usable prototypes.</p> <p>Rough and rapid prototypes are built quickly to allow the idea to come to life, to allow further development and refinement. Prototypes in this mode can be;</p> <ul style="list-style-type: none"> • Made from basic materials cardboard, paper, • A sketch • A role play • Service model diagram • Mock-ups • Storyboards <p>Minimum-usable prototypes are quick</p>	<p>Tools and methods in this phase should support prototyping.</p> <p>Tools:</p> <ul style="list-style-type: none"> • Material for building models • Drawing materials • Computers and software • Equipment • Space • Observations • Test results • Feedback • A role play • Service model diagram • Mock-ups • Storyboards

	<p>builds that are functional to test the idea. Prototypes in this mode can be;</p> <ul style="list-style-type: none"> • Quick App / website builds • Product builds • Systems changes tested on selected users • A/B testing • Lesson plans • Assessment tools • Communication systems <p>The prototyping phase cycles through building, testing, feedback and learning.</p> <p>As prototypes are developed they are tested. The outcomes and the feedback are recorded to further develop and refine the prototype.</p> <p>If the prototype is deemed unfeasible, unviable, undesirable or unusable then it is put aside, a new idea is then prototyped, a new ideation phase commences to find new ideas or the problem statement is reviewed.</p>	
Implementation	<p>The Implementation phase takes a prototype that has been developed into workable solution to production stage or testing in the real context.</p> <p>The implementation phase a can be;</p> <ul style="list-style-type: none"> • An extended test or field test of a prototype • A plan for the implementation of the solution. <p>The Implementation phase can include planning, costing, relationship and partnership building, contracting services, manufactures, and developers.</p>	<p>Methods and tools support the implementation of the solution into the context for testing or full implementation.</p> <p>Tools</p> <ul style="list-style-type: none"> • Plans • Costing sheets • Revenue models • Stakeholder Workshops • User group testing • Contracts • Models or frameworks • Strategies • Business models • Community workshops • Crowdsourcing campaigns • Beta release • Presentations
Reframing	<p>The reframing phase can include;</p> <ul style="list-style-type: none"> • Revisiting the context and problem to evaluate if thinking, the context or problem has changed during the PD session. • Revisiting the context and problem to evaluate the solution/s success and possible improvements. 	<p>Tools and methods support evaluation of the solution/s the users, the problem, stakeholders and context. Discussion and reflection are used during reframing this can be individual, group, facilitated or non-facilitated.</p> <p>Tools used in this phase can be the same tools used in the framing phase,</p>

	<ul style="list-style-type: none"> • Remapping the context to identify if other problems have appeared or disappeared. • Shifting the context of the solution to a new problem to gain new insights. <p>Evaluation of the solution is important because complex / wicked problems change and adapt to solutions. Solutions can cause new problems to appear or the solution is only temporarily successful due to new or more significant problems arising. The reframing phases can lead to a new phase of design thinking.</p>	prototype phase and implementation phase.
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Figure 5.9: Design thinking model phase's descriptions and tools

5.1.4 Contextualising the learning concepts with design thinking

In the academic realm, there is a rich body of knowledge about learning which includes the view that there is no one learning theory that would be able to address the needs of all learners in all environments (Docking, 1998; Fenwick & Tennant, 2004). When adult learning, transformational learning, experiential learning and action learning were compared there were commonalities identified in the approach, theory and process of each of the concepts.

The objective of this research was to identify if design thinking can be used as a PD method. An intrinsic component of PD is the process of learning. Therefore understanding if or how design thinking could support learning rather than support one theory over another was the required outcome of the research. As such the PD session design incorporated elements that supported the concepts of learning that included participant enrolment, design thinking problem, participant involvement, the PD process and the role of the facilitator. The following identifies how or where learning was supported in the design of the PD session:

- The Participant enrolment process:
 - Enabled self nomination to participate
 - Included information about the format and reason for the PD
- The Design thinking:
 - Activity was focused on solving a problem
 - Problem was applied in a real context
 - Problem took into account the micro and macro context
- The design of the PD enabled participants' to:
 - Use past experiences, skills and knowledge
 - Construct learning from new experiences

- Works as an individual
- Work in a small team
- Use self directed decisions and solution creation
- The PD process
 - Recognised the participants as equals and individuals
 - Developed new skills and knowledge
 - That would have valued by the participant
 - That could be applied in the work role
 - Allowed for involvement in the learning
 - Included action and theory
 - Allowed for experimentation, discussion, reflection and feedback
 - Challenged assumptions and beliefs
 - Used storytelling
 - Enabled the development of empathy
 - Focused on the learning journey rather than the solution
 - Included the activities that were enjoyable
- The facilitator
 - Guided and supported the process
 - Encouraged, challenged and supported the participants
 - Provided an environment that was safe, enjoyable and supportive
 - Had skills and knowledge and experience in design thinking
 - Had skills and knowledge and experience in RA, training and disability

5.2 The design of the PD session methods and tools

This chapter outlines each of the five sections in the three hour PD session. The sections follow the framing, Ideation, prototyping, implementation and reframing phases of the design thinking model developed for this research. The five sections are broken into nine steps consisting of individual and group activities. Steps one to three are warm up exercise for individual participants using brain writing. Brain writing allows participants to participate without feeling intimidated and supports participants by building up their confidence before attempting group brainstorming (VanGundy, 1984). Steps four to nine are group activities.

The research activities stages completed in the PD session (see Figure 5.11) have been discussed in section 5.4.8 Questionnaires.

5.2.1 PD participant restriction

The PD is designed to introduce VET trainers to the concept of reasonable adjustment, build empathy for students with disability and enable trainers to use this method to design and implement reasonable adjustments into their training. Figure 5.11 shows the PD session followed the design thinking model developed for the research (Figure 5.6).









Design thinking typically includes all stakeholders and end user as participants therefore this PD should include trainers and students with and without disability. However the PD's participant selection has deliberately been restricted to include only the trainers. The trainers involved in the PD were unknown to the researcher. Therefore there was no indication of the trainer's experienced or inexperienced with reasonable adjustment or working with people with disability. The stakeholder restriction was to ensure that participants are protected from any possible harm. The restriction was envisaged as away to create a safe and supportive environment for the Trainers. Instead people with disability were represented by personas and using a video story.

5.2.2 The PD Booklet design

The PD session booklet contains information for each section and the information and handouts required for each step (Appendix 4.1). The full booklet was not given to the participants at the beginning of the session. Participants are given the information and activity handouts for each step as required during the PD session. The activity handouts are provided as A3 printouts. This process was used

to reduce the possibility of the participants feeling overwhelmed at the start of the PD session and they did not read ahead or start activities out of order.

The presentation of the booklet was adapted from the Design Thinking for Educators (IDEO, 2012). The booklet consisted of information and activities that were coded with symbols that indicate the mode of the activity, if the activity was a group or individual activity and the time allocation (Figure 5.10). These symbols were inserted in to the footer of the page as a quick reference for the participants.

Symbol	Name	Description
	Investigate / Plan	Activities in this mode require the participant or team to investigate, discover, inquire or search for information
	Reflective	Activities in this mode require the participant or team to reflect upon experience, information, activity, idea, prototype or data
	Discussion	Activities in this mode require the participant or team to discuss with each other in a group or one on one; it may also involve discussion with people outside of the team.
	Do	Activities in this mode require the participant or team to do something, like build a prototype, role-play, sort data or create a user journey.
	Group	Recommended as a group activity
	Individual	Recommend as an individual activity
	Incremental	Incremental Time period, the activity can be stopped and restarted
	Timed	Timed activity, the activity is completed in a set time.







 Mode Investigate / Plan	 Mode Group	 Mode Incremental - 20-90 mins
 Mode Reflective	 Mode Individual	 Mode Timed - 15-20 mins

Figure 5.10: Booklet symbols adapted from Design Thinking for Education including examples of footer from booklet

5.2.3 Introduction

PD Stages	Time	Resources	Type	Run time
Consent Form	5 minutes	Consent Forms research activity	Individual	5
Questionnaire	5 Minutes	Questionnaire 1 research activity	Individual	10
Introduction	5 Minutes	PowerPoint	Individual	15
Step 1 - Framing	10 Minutes	Framing the context, Job Profile	Individual	25
Step 2 - Framing	15 Minutes	Injury profile, Empathy Map	Individual	40
Step 3 - framing	10 Minutes	Insights,	Individual	50
Step 4 - Framing	20 Minutes	Problem statement, Butchers paper, large sticky notes, Injury Impact	Group	70
Step 5 - Ideation	20 Minutes	Video, Sticky notes, Accommodations handout	Group	90
Step 6 – Prototyping	20 Minutes	Paper, Masking tape, Cardboard, Scissors	Group	110
Step 7 – Implementation experimentation	20 Minutes	As above, 1 Member from another team	Group	130
Step 8 - Sell it	10 Minutes	Paper, Masking tape, Cardboard	Group	140
Step 9 - Reframing	20 minutes	PowerPoint	Group	160
Questionnaire	5 Minutes	Questionnaire 2 research activity	Individual	165
Time allocated	180 minutes			

Figure 5.11: Session Delivery

The introduction to the PD session provided an overview of the concept of reasonable adjustment, created a connection between reasonable adjustment and light duties in the workplace, and outlined the sections in the PD session (appendix 5.1).

The participants were given a brief overview about reasonable adjustment and how it relates to the DDA, the DSE and the legal obligation of all education providers to provide reasonable adjustment for students with disability.

To explain how reasonable adjustment can be applied in a workplace for a person with a disability the concept of reasonable adjustment is compared to application of light duties in a workplace. When an employee is temporarily injured adjustments are made to accommodate the injury to allow the employee to continue work. This comparison is designed to establish a concrete and possibly a personal link to the concept of reasonable adjustment. The participant may not

be able to understand or conceptualise reasonable adjustment for another person in the training environment. However, they may have had previous personal experience of being injured at work or they may know somebody who has been injured at work. The injury may have resulted in the person returning or not returning to work.

Using this method to explain reasonable adjustment supports the adult learning principles of making the training and example relevant to the participant. The use of effective and cognitive information was provided in the framing section to support the building of empathy for a person with a disability. This explanation links the introduction to the framing phase and the introduction of the injured worker scenario.

The participants were broken into groups by the facilitator after the introduction section. Each groups consisted of trainers from different industry areas such as fashion, animal studies and beauty and hairdressing. This assisted in increasing diversity in the groups and allowed for different perspectives while providing variety of job roles. This was designed to encourage naïve questions from participants about other people's job skills and knowledge.

5.2.4 Framing

The objective of this section was to create empathy for a person who has been injured and has sustained a permanent or semi permanent disability. To optimise the possibility of participants feeling empathetic for the person the scenario was personalised so that the participant adopts the role of the injured employee. The framing section consists of 4 steps and runs for 55 minutes.

The facilitator established the scenario explaining that they, the participant, sustained an injury outside of work and they have now returned to work. The sustaining of the injury outside of work is deliberate as it removes the support of the workers compensation system and injury management being work related.

The scenario is deliberately created with the participant as the injured employee to allow them to connect personally with the scenario. To enable them to reflect on how this scenario would affect them from a practical and emotional point of view.

The participants analysed their current job role using the concept of what they do, say, think and feel while working. This will then link to the modified empathy map designed for the PD session.

They were then presented with a Injury Profile which they use to understand the impact that injury has on their ability to perform their job. This impact is documented by identifying what job duties would require reasonable adjustments to enable them to continue to work in their current role.

Using the participant's own job role is important as it links this section to step 9.0 the reframing phase. As all of the participants are trainers and a significant component of their job role is demonstrating and instructing students in the skills and knowledge that the students need to learn and demonstrate competency. Therefore, if they can identify the barriers created by the injury or disability and they can make reasonable adjustments that enable them to continue to work in that role. Then this can be used in the reframing section to illustrate that these adjustments could be used for a student with a similar injury or disability.

The participants are given the framing handout from the PD booklet (Appendix 4.1). The framing handout gave the participant further information about the DDA, employer's responsibilities and an overview of the types of reasonable adjustments applied in work environments. The Framing handout was designed as a resource that could be used with the associated activities in the framing section. The Framing handout is design to create a context for reasonable adjustments and is written to engage the cognitive and affective elements of empathy.

The following outlines the handout by section title and a brief description of that section. The section has been related to the empathy element that the section was designed to engage.

Section	Empathy element
Employment	
This section covers the DDA and the capacity for an individual to perform the inherent job duties	Provides information, questions assumptions and thinking. It is important to distinguish between what needs to be achieved within "inherent job requirements" and how it is achieved the "process, procedure or equipment used".
A Person first	
This is a statement about the importance of treating each person as an individual and not to make assumptions about their abilities or disabilities.	Embraces the principle of RA and the 'same as basis'
Disability Discrimination Act	
This is a copy of section 4 from the DDA.	Provides factual information about the definition of a disability under the DDA.
What are an employer's obligations under the DDA?	
An outline of the main obligations of an employer and what is direct discrimination under the DDA.	Provides factual information.
Performing the inherent job duties	
Clarifies that employers can make an assessment based on the inherent requirements of the job	Provides factual information, raises the question about the "inherent job requirement" being used to directly or indirectly discriminate.
That it is not unlawful under the DDA to comply	

with another law.

DDA and health and safety

Provides information, questions assumptions and thinking.

What type of adjustments may be made?

An outline of some of the common adjustments made in workplaces

Provides information, questions assumptions and thinking.

What information should employers use for and about reasonable adjustments?

Explains that an employer should not make assumptions about costs or abilities of employee.

Provides information, questions assumptions and thinking.

Unjustifiable hardship / unreasonableness

States that reasonable adjustments should not create unjustifiable hardship or be unreasonable in cost or implementation for the employer.

Provides information, questions assumptions and thinking.

Other laws and Acts

That other Laws and Acts and the organisational processes and procedures need to be considered.

Provides information

5.2.4.1 Step 1.0 - Job Profile

Job Role / Duties

Job Profile

DO	SAY	THINK	FEEL

Mode
Reflective

Mode
Individual

Timed - 15:20 mins

Job Role / Duties

DO
Example of do: Do you use machinery, computers, tools, your feet, your hands, your eyes.
Do you work alone, with others, in a small group, in a large group
Do you have to read text books, equipment read outs, labels

SAY
Example of say: Do you have to use communication to be persuasive, passive, compassionate, assertive, welcoming
Do you have to present to a group, individual or co-workers
Do you have to talk on the phone, write documents, fill in forms, send emails

THINK
Example of think: Do you have to use problem solving, analytical thinking, make calculations in your head
Do you have to have confidence, be able to think quickly, be able to reflect on what you have done, weigh up options, make critical decisions

FEEL
Example of Feel: Do you need to be able to feel hot /cold, soft / hard, smooth / rough
Do you need to be able to feel a pulse, grip strength, if you are pushing or pulling, is the force softly or hard
Do you need to be able to have compassion for others, understand how others feel, be mindful of others feelings

Visualising the data

job duties

two by two

Venn diagram

Venn diagram

Journey / process map

Journey / process map

relationship map

relationship map

Mode
Reflective

Mode
Individual

Timed - 15:20 mins

Figure 5.12: Job Profile handout

The participant analysed their job role using the *Job Profile* (Figure 5.12). The front of the job profile handout consisted of four columns do, say, think and feel. The

back of the handout has an explanation of each of the columns see Figure 5.13. Figure 5.13 shows that by using these headings it could assist to raise the participants awareness of the affective and cognitive elements of a job.

The facilitator's role was to encourage participants to see their job as containing different elements, which relate to feel (emotional and tactile), doing, saying (internal and external) and thinking. This was a warm up activity for the PD session. A familiar subject was used to open participants thinking about their job role and how they viewed their job role. The job profile columns do, say, think and feel aligned with the four of the headings used in the empathy map in the step 3.0.

The back of the handout also included diagrams illustrating how the data produced in this step could be collated using a Venn diagram, Two by Two matrix, a journey / process map or a relationship map to allow for further insights.

This was a 15 to 20 minute individual activity.

Do

Example of do:

Do you use machinery, computers, tools, your feet, your hands, your eyes.

Do you work alone, with others, in a small group, in a large group

Do you have to read manuals, equipment read outs, labels

SAY

Example of say:

Do you have to use communication to be persuasive, passive, compassionate, assertive, welcoming

Do you have to present to a group, individual or co-workers

Do you have to talk on the phone, write documents, fill in forms, send emails

Think

Example of think:

Do you have to use problem solving, use analytical thinking,

Do you have to make calculations in your head

Do you have to have confidence, be able to think quickly,

Do you have to be able to reflect on what you have done,

Do you have to be able to weigh up options, make critical decisions

Feel

Example of Feel:

Do you need to be able to feel hot /cold, soft / hard, smooth / rough

Do you need to be able to feel a pulse, grip strength,

Do you need to be able to feel if you are pushing or pulling, is the force soft or hard


Do you need to be able to have compassion for others,

Do you need to be able to understand how others feel, be mindful of others feelings


Figure 5.13: job profile do, say, think, feel examples

5.2.4.2 Step 2.0 - Injury Profile


Injury Profile	Mental Health	Injury sustained outside of work
<h3>Injury Profile</h3> <p>Injury Type: Mental Health Injury occurred: Outside of work</p> <p>This injury profile is to be used by you to consider the impact of this injury on you and how it would effect your capacity to do your job.</p> <hr/> <p>Job Role</p> <p>Your job role / duties for this exercise is your current job role / duties.</p> <hr/> <p>Medical</p> <p>MEDICATIONS:</p> <ul style="list-style-type: none"> - Anxiety medication - Antidepressants <p>REHABILITATION:</p> <ul style="list-style-type: none"> - Counselling once per week for 3 months - Medication <p>APPOINTMENTS:</p> <ul style="list-style-type: none"> - Counselling once per week for 3 months - Doctors appointment every 4 weeks for medication review <hr/> <p>Psychological</p> <p>MEMORY</p> <ul style="list-style-type: none"> - Poor short term memory - Easily distracted - Reduced concentration <p>MOOD</p> <ul style="list-style-type: none"> - Feeling down and unmotivated - Feeling anxious - Not communicating - Easily stressed or Overwhelmed - Panic Attacks <p>FUNCTION</p> <ul style="list-style-type: none"> - Disturbed sleep - Can not think clearly - Disorganised - Aggressive communication with co-workers, customers and family members - You have a fear of public speaking 		
<p>Physical Impact</p> <p>PHYSICAL RESTRICTIONS:</p> <ul style="list-style-type: none"> - No physical injury - Tiredness And Fatigue - Over sleeping - Anxiety reaction <p>RESULTS:</p> <ul style="list-style-type: none"> - Unsure of physical capacity - Shaking - Not waking up for work - Sweating <hr/> <p>Recovery time</p> <p>SHORT TERM</p> <ul style="list-style-type: none"> - Expected reduction of symptoms within 3-6 months - Reduction is dependent on medication and behavioural changes - Memory should improve - Tiredness and fatigue should improve <p>LONG TERM</p> <ul style="list-style-type: none"> - Anxiety will be an ongoing condition, however symptoms may reduce over time with management - Depression is believed to be the result of the impact of the anxiety and your current situation - Depression may reduce if anxiety levels can be controlled <hr/> <p>Current impact</p> <p>WORK</p> <ul style="list-style-type: none"> - You have currently had 2 months off work - Sick leave - None available - Holiday leave - None available - Employer is concerned about capacity to be employed in current role - Job productivity is 20% <p>PERSONAL</p> <ul style="list-style-type: none"> - You are the sole income earner in your household - You have a large mortgage - You have 2 kids still at school - You have limited family support - You are worried about your future - You feel tired and frustrated - You are arguing with your partner 		



Mode
Investigate / Plan



Mode
Individual



Mode
5 mins

Figure 5.14: Example of injury profile

The *Injury Profile* Figure 5.14 was a modified persona as described in the design thinking tools section. The profile included information about the injury's impact on the person's work and personal life. There were three different profiles which included mental health, physical disability and executive function. Each profile represented a disability type that could be presented by a student in the training environment. Injury Profile One is a mental health disability, which was caused by a traumatic event, the primary concern were anxiety and the secondary concerns included depression, insomnia, fatigue and aggression. Injury Profile Two was an executive functioning disability which was caused by an injury to the brain, the primary concerns were seizures, mood and behavioural changes and the secondary concerns included memory, a reduced intention span, minor balance issues and language difficulties. Injury Profile Three was a physical disability, which was caused by a traffic accident, the primary concerns were injury to left hand and right knee and the secondary concerns were fatigue, loss of confidence, pain and mood.

Each profile included the following:

Injury type	Generic term
Where	What part of the body was affected (not included for mental health)
Injury occurred	All injuries occurred outside of work to remove the complexity of workers compensation.
Job role	This was the job role of the individual trainers to allow the injury to be contextualised to their job
Medical	Medications required and side effects Rehabilitation activities required Appointments during recovery and ongoing
Psychological	Memory issues Mood changes Functional impact of memory and mood changes
Physical Impact	Physical restrictions caused by injury Results of physical restriction to functional
Recovery time	Short term (6-12 months+) Long term (12 months+)
Current Impact	Work – job performance and employer concerns Personal – Life & relationships issues and situation

The injury profile was written as a reflective tool to engage the participant in process of contemplating how this injury would affect them and how would they feel if this had happened to them. The injury profile used a combination of objective and subjective information to provide a profile that incorporates the affective and cognitive elements of empathy. The injury profile gave the participants an in depth insight of the individual injury beyond a medical description of the injury and the resulting disability. The injury profile was written like a persona it was an emotive and challenging glimpse at the possible results of such an injury and resulting disability. The injury profile included the short and long term recovery or improvement prospects and the effects on the individual in relation to their personal life and work capacity.

The same injury profile was given to all members of a group. This allowed the group to work together in later stages of the PD. The participants used the injury profile to assist them to complete step 2.1 the empathy map.

5.2.4.3 Step 2.1 - Empathy Map

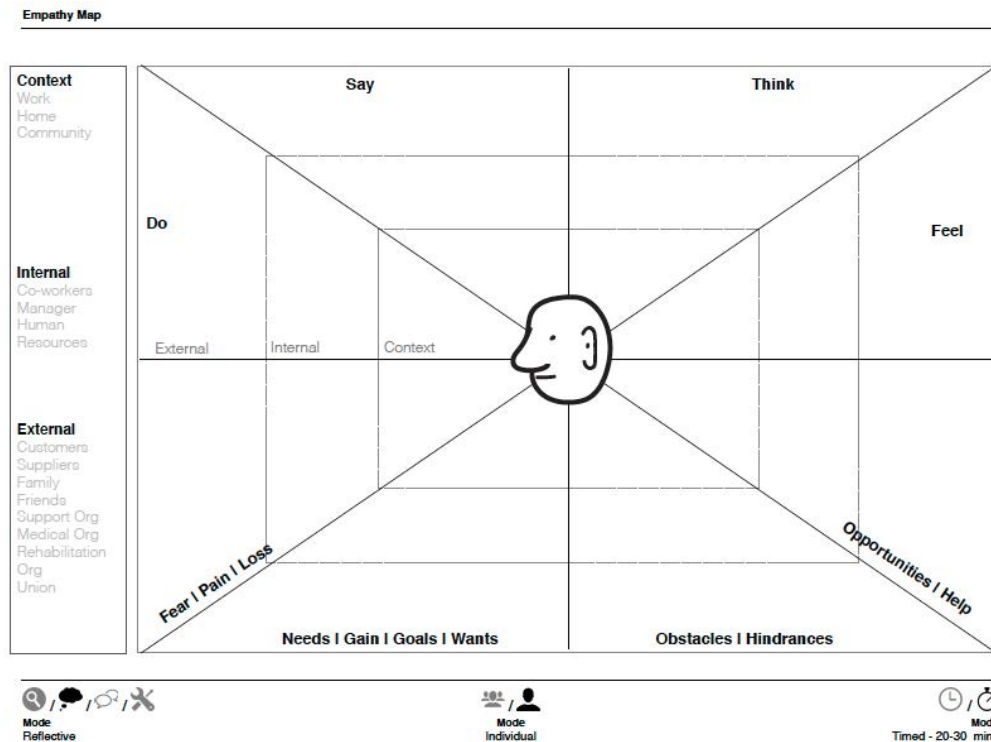


Figure 5.15: Empathy map handout adapted from Xplane empathy map.

During step 2.1 the participant was asked to complete the *Empathy Map* Figure 5.15 from three different perspectives. Firstly from the perspective of the job profile completed in step 1.0. Secondly from the perspective of how they feel the disability would affect them including the impact on family, work and community. Thirdly they looked at the empathy map through the internal and external elements. The purpose here was to try to engage the participant in the reality that a disability is not just present at work but it will impact all elements of their life. This was to increase the messiness and complexity of the problem. This was to increase the participant's awareness of the impact of the disability from the simple to the highly complex; to try and engage the required thinking would be needed to envisage these types of barriers.

The participants used the job profile to assist them as a reflective tool and to assist them to complete the do, say, think and feel sections of the empathy map. The participant was asked to identify things that they thought would be affected by the disability from the point of view of the job profile.

The empathy map included prompts on the left hand side under the heading of context, internal and external considerations. This provided greater complexity to the context for empathy mapping. The context included the impact at work,

The internal work consideration allowed the participants to reflect upon how they perceived the internal elements of work would have been effected by the disability and their work capacity. The internal elements included co-workers, managers, the work environment and the organisational supports like human resources. The external work elements included those elements that had a direct or indirect impact on the work role. External elements could have included customers, suppliers, family, friends, support organisations, medical services, rehabilitation services, unions, shops, banks, utility providers, the general public and community infrastructure.

The empathy map was designed to enable the participant to develop empathy for the situational context and the impact of the disability on a person's life not just in the work context. This was to highlight that the person's disability is permanent and is present in all parts of their life.

Image

Theme cluster / Headlines

INSIGHTS

insight
stress is the main trigger for an
secondary attack and loss of
members.

Turn over for examples

Image

- Cluster into themes
- Find a headline for the theme
- Convert the headline into a statement

Example themes

- Physical tasks
- People tasks
- Communication tasks
- organisation and planning tasks
- Feelings
- Fears
- Goals
- Helpers
- Handicaps
- Emotions
- Groups
- People
- Fatigue
- Ability
- Strengths
- Weakeness
- Opportunities
- Threats
- Mood
- Memory
- Attendance

Converther

- Manager
- Customer
- Family
- Outside of work
- At work
- Client
- Indirect
- Reactioned
- Symptoms
- Talking
- Presentation
- Work completion
- Interpersonal skills
- Essential
- Non-essential
- Desirable
- Timeframe
- Recovery
- Medication
- Behaviour
- Support
- Access
- transport

Image

INSIGHT
stress is the main trigger for an
secondary attack and loss of
members.

Image

INSIGHT
stress is the main trigger for an
secondary attack and loss of
productivity for the staff members.

Page 113 of 273

In Step 3.0 the participants completed the *Insights* handout Figure 5.16. This could have been completed as an individual or as a group to create a single set of insights. The purpose of the insights process was the grouping of similar words or phrase from the participant's empathy maps into themes. The insights process created collections of data groupings that were converted into headlines. These headlines were insights into the situation, the user experience, or the impact of the disability. Theme examples were given on the back of the handout to assist the participants to start the data grouping process. Figure 5.16 gives an example of how to convert a headline into an insight statement, which would be used to communicate that insight.

The participants were encouraged to continually regroup the data into new theme groups to create more headlines and insights. This step was recommended as a group exercise to allow for multiple perspectives when data grouping and gave the participants access to all of the group's data. Participants were encouraged to transfer the words and phrases from their empathy map on to sticky notes. This would enable them to group and sort the data, using the methods suggested on the back of the job profile handout in step 1.0.

The group was required to produce at least 5 insights before they could move to step 4.0. The insight statements were used in the Problem statement activity in step 4.0.

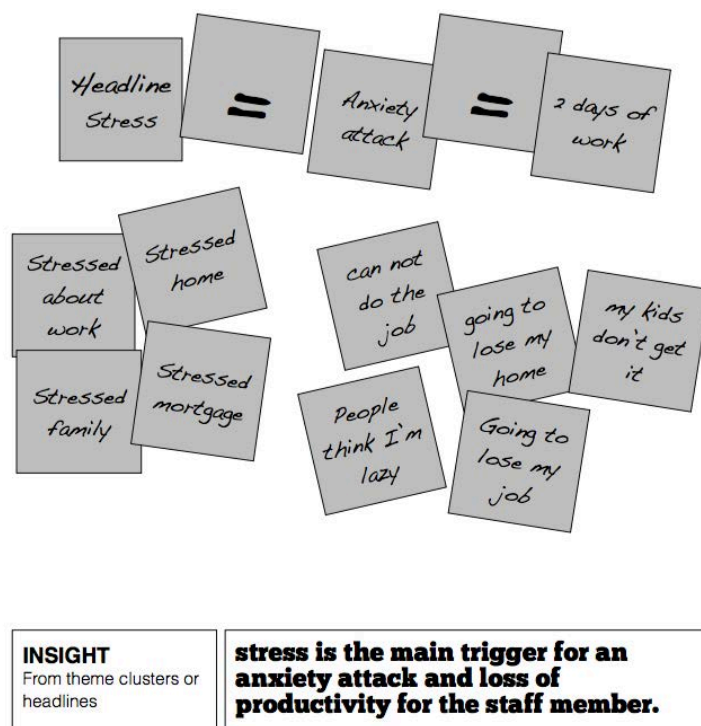


Figure 5.16: Example headline to Insights statement

5.2.4.5 Step 4.0 - Problem statements

[illegible]

Figure 5.17: Problem statement adapted from Design thinking for Educators. (IDEO, 2012)

The problem statement process ensured that the participants were not moving from insights to ideation without clarifying the problem they were trying to solve. The *Problem Statement* handout (Figure 5.17) and activity was an important step. The problem statement should have been written with empathetic language, included the stakeholders affected and the insight that was discovered. The front page of the problem statement handout assisted participants with this process as it included key steps to consider when developing the problem statement. The problem statement handout provided an example of a problem statement and provided the R words that could be used in the 'need' section of the problem statement (Figure 5.18). Figure 5.18 shows the R words at the bottom of the problem statement handout. These words were prompts used to generate the need sentence in the problem statement or generate alternative words.

The Rs : reduce, redesign, restructure, remove, replace, re-train, re-educate, re-enforce, remind, review, rearrange, resolve, rewrite, reschedule, repeat, re-establish, reflect, responsive.

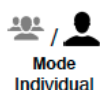


Figure 5.18: R words from the problem statement handout.

Figure 5.19 shows the example problem statement on the back of the problem statement handout. The problem statement used the insight and converted it into a problem statement by including the stakeholder and the need. The problem statement was constructed in three sections:

- **The stakeholder/s** - who does the problem affect
- **The need** – What is the stakeholders needs – The stakeholder needs a way to do what
 - Because - this is the insight from step 3

The problem statement was written to highlight the need as broad concept, which allowed the group in the ideation section to develop multiple solutions for a single problem statement.

STAKEHOLDER Stated in empathetic language	A valued staff member with an anxiety issue
NEED Stated as a need (verb)	Reduce stress in the workplace
INSIGHT From theme clusters or headlines	stress is the main trigger for an anxiety attack and loss of productivity for the staff member.

Figure 5.19: example problem statement

5.2.4.6 Step 4.1 - Injury Impact

Injury Impact

DIRECT IMPACT

INDIRECT IMPACT

Mode

Reflective

Mode

Individual

Timed - 15-20 mins

Injury Impact

DIRECT

Example of direct:

What direct impact does the injury have on work duties?

- The person's ability to do the job.

Unable to operate machinery due to injury to one hand

Unable to list objects due to injury to leg

Disorganised because of short term memory

Unable to present to a group due to anxiety

INDIRECT

Example of say:

What indirect impact does the injury have?

- The impact on the person due to other peoples behaviour, events or things outside of work, other issues that the injury has caused outside of work.

Other staff complain about lack of productivity

Late to work because of transport issues

Late to work because of fatigue and tiredness

Worried about future and family increases anxiety and stress levels

Pain causes concentration and work tolerance issues

Visualising the data

Direct

Indirect

Phone calls

✓

Sewing

✓

group work

✓

stretching

✓

cutting

✓

being on time

✓

planning

✓

Mode

Reflective

Mode

Individual

Timed - 15-20 mins

Figure 5.20: Injury Impact handout

The injury impact activity was the last step in the framing section. Figure 5.20 includes the front and back of the *Injury Impact* handout. The Injury Impact activity provided an opportunity for the participants to review the impact of their disability and ability to perform the job. This step enabled the participants to reframe the job and the disability in relation to the current information, their empathy, their insights and problem statements.

The impact to perform the job was considered in three ways direct impact, indirect impact or no impact. Direct impact meant that the injury or disability created a barrier or difficulty when performing the job; example having the use of one hand may reduce typing speed. Indirect impact meant that the consequence of the injury or disability created a impact that affected the job indirectly; example having to rely on public transport could causes issues with being able to get to work on time. No impact meant that the injury or disability has no impact on the job; example social anxiety may not affect the person's ability to work on projects individually. This reflection included the problem

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statements they had created and to examine if the problem statement was a direct or indirect result of the injury or disability.

This injury impact reflection was a group or individual activity. If completed Individually the participant used the handout. If completed as a group they could sort the data, using the methods suggested on the back of the job profile handout in step 1.0.

5.2.5 Ideation

5.2.5.1 Step 5.0 - Ideation



Figure 5.21: Clay Dyer screenshot from youtube video

Prior to starting the ideation session the following question was posed to the participants.

‘How could you go fishing without any hands, no left arm, half of your right arm and no legs, without the assistance of another person or technology?’

Responses were taken from the group. This question was answered by playing a section of the youtube video of Clay Dyer a Professional Bass Fisherman who has a physical disability. Figure 5.21 is a screen shot of Clay tying a lure to his fishing line using only his mouth (YouTube, 2007). This video illustrated how human ingenuity, a positive attitude, motivation and experimentation can solve what could be conceived as the most insurmountable difficulties. The video illustrated

to the participants the need to keep checking their assumptions and point of view when deciding what was possible or not possible during the ideation session.

Prior to answering the question the video was played including the back-story about Clay as a child, his life and family interviews of the video was played. This video was used to further develop empathy for people with disability. The use of the video was to extend the participants concept of what it was about a disability that created an impact or barrier. This was to highlight to the participants that they should consider when and how a disability was or was not disabling and that the person may already have the solution that they require to remove the barrier.



Figure 5.22: ideation handout

The participants were given the *Ideation* handout. Figure 5.22 shows the front and back of the ideation handout. The handout included information about brainstorming as an ideation tool and the rules of brainstorming. The benefits and setup requirements for a group or individual brainstorming session. How participants could keep thinking divergently by changing their perspectives or constraints in the ideation process.

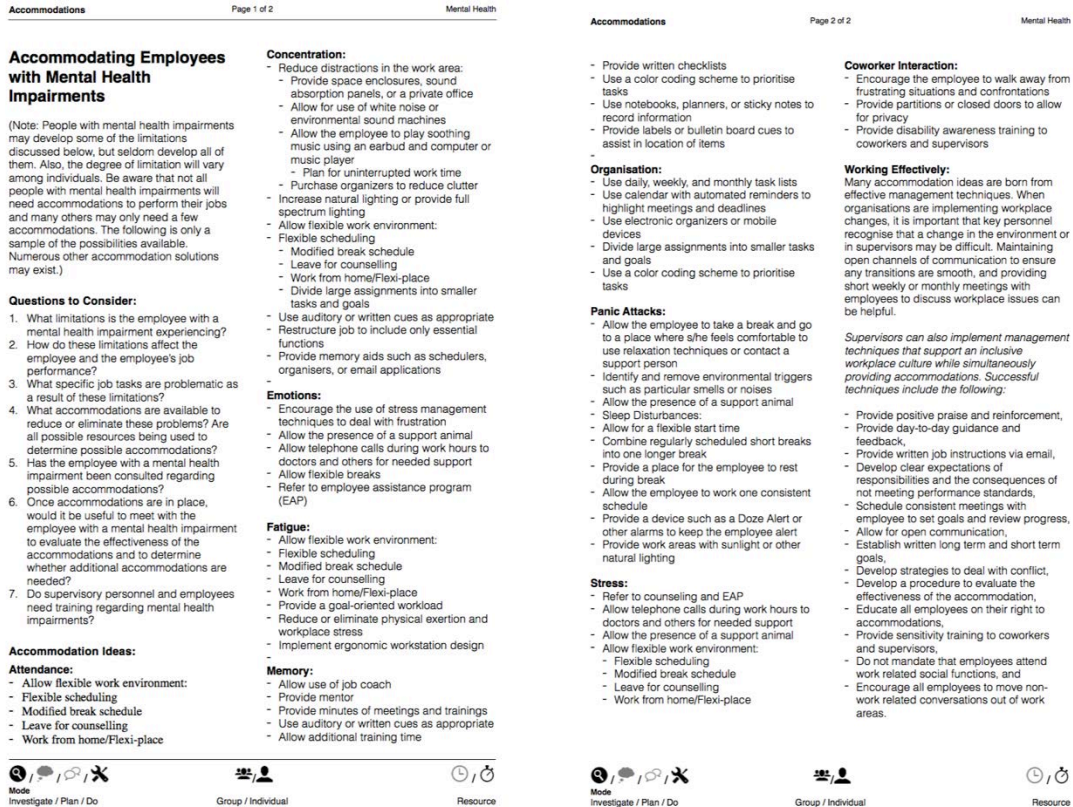


Figure 5.23: Accommodating employees with a Mental Health impairment

The groups were provided with a work accommodation handout that related to their disability. Figure 5.23 shows the *Accommodating Employees with a Mental Health Impairment* handout. The information provided was comprehensive list of general accommodations provided in the work place. The accommodation handouts included questions to consider when working with people with a disability. Which included accommodations for attendance, concentration, emotional needs, fatigue, memory, organisational deficits, panic attacks, stress, co-worker interactions, working effectively, time management, multi-tasking, social skills, paperwork, getting to work, hyperactivity, impulsivity, reading from paper or a computer screen, spelling, physical environment, equipment and use of medications. The handout was provided as a substitute for stakeholder input and as a resource during ideation. These were only general adjustments and still required contextualisation. It was intend to show that there was information available that could be used as a starting point when considering and designing reasonable adjustments.

The facilitator introduced the participants to the ideation process and the rules of brainstorming were outlined. The participants were encouraged to go for quantity and creative solutions. The participants had the opportunity to do a warm up exercise to encourage creative thinking and to create the environment for

ideation. The participants commenced the ideation process as a group and were encouraged to use sticky notes that could be place onto walls or butchers paper.

During the ideation phase the participants work together as a group to brainstorm as many solutions as they could to the problems statements they had created in step 4.0 of the framing phase.

5.2.6 Experimentation and Prototyping

5.2.6.1 Step 6.0- Experimentation and prototyping

Experimentation

Experimentation | Convergent thinking

“Make, do, play.”

Step 1

Select promising ideas

What it gets you

A selection of ideas that the whole team is excited about taking forward.

What to keep in mind

Don't spend too much time trying to identify the best thing to do. Trust your gut feeling—as long as there is excitement about an idea, it will be a good basis to work from.

Dare to leave behind some ideas at this point. You can always come back to your larger pool of brainstorm ideas and try out a new one if your first choice does not lead to success.

How

- Cluster the ideas

- Vote for favourite ideas

- Discuss the results

Step 2

Do a reality check

What it gets you

A first step toward bringing your idea to life.

What to keep in mind

A reality check might seem discouraging, as you may have to let go of some ideas. Focus on the possibility of actually building an idea in the long term to keep up your collective energy. Consider doing these check-ins on a regular basis as you move forward with idea development.

How

- Find out what your idea really is about

- What are the constraints

- Can new ideas come form these constraints

- Evolve the idea

- Archive ideas

Step 3

Build to Think

What it gets you

A first, tangible expression of your idea tag you can share and learn from.

What to keep in mind

Seeing an idea come to life, even in a very basic form, injects enthusiasm and energy into a team's work. It is an opportunity to experiment and have fun while learning about your idea.

Prototyping is not about getting it right the first time: the best prototypes change significantly over time. Give yourself permission to try, and fail, and try again.

Sometimes your worst ideas teach you the most. Prototyping them may lead to new inspiration.

Challenge yourself to come up with at least three different versions of your idea to test multiple aspects of the possible solutions your team has come up with.

How

- Pick an idea

- Build a prototype

- Share back your discovery / prototype / learning

WHAT TYPES OF PROTOTYPES

- Create a storyboard

- Create a diagram

- Create a story

- Create an ad

- Create a mock-up

- Create a model

- Create a role-play

Experimentation Sessions

You can break your team into small groups to work on different ideas or work together in one idea. Make sure that your energy is high and everyone is contributing.

reason you want work here is we care about people.

Create a mock-up

Build mock-ups of digital tools and websites with simple sketches of screens on paper. Paste the paper mock-up to an actual computer screen or mobile phone when demonstrating it.

Create a model

Put together simple three-dimensional representations of your idea. Use paper, cardboard, pipe cleaners, fabric and whatever else you can find. Keep it rough and at a low fidelity to a start, and evolve the resolution over time.

Create a role-play

Act out the experience of your idea. Try on the roles of the people that are part of the situation and uncover questions they might ask.

Create a new way

Create a new way of doing something. Re-write, re-design, re-structure, re-invent, replace or remove. What can be added or subtracted to make it work. Use the six thinking hats process, feelings, facts, creativity, benefits, cautions.

“don't be afraid of failure” or more importantly “ fail often”.

Prototyping Ideas

Create a storyboard

Visualise the complete experience of your idea over time through a series of images, sketches, cartoons or even just text blocks. Stick figures are great—you don't need to be an artist. Use Post-it Notes or individual sheets of paper to create the storyboard so you can rearrange their order.

Create a diagram

Map out the structure, network, journey or process of your idea. Try different versions of your visualisation. Design new ways of doing things, create examples of the process or work tasks.

Create a story

Tell the story of your idea from the future. Describe what the experience would be like. Write a newspaper article reporting about your idea. Write a job description. Create a letter to be sent to the manager. Describe your idea as if it were published on the organisational website as a good news story or example of success.

Create an ad

Create a fake advertisement that promotes the best parts of your idea. Have fun with it, and feel free to exaggerate shamelessly. Eg. The

Mode Do

Mode Group

Mode

Mode

Timed - 20 mins

Timed - 20 mins

Figure 5.24: Experimentation handout

The facilitator introduced the experimentation and prototyping process and clarified the steps in this process. The participants were asked to follow the steps to

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check that the idea/s they would work on had been agreed to by the group and had the greatest possibility of being prototyped and tested. The facilitator introduced the different types of prototypes that could be produced and encouraged participants to focus on building, testing and then reflecting. The concept of failure was discussed as a learning activity rather than being seen as a negative outcome. Participants were given access to materials to build prototypes; paper, cardboard, pens, masking tape, scissors and craft knives.

Figure 5.24 shows the front and back of the *Experimentation* handout. The participants were given the experimentation handout as a reference to the steps for experimentation including selecting promising ideas, doing a reality check and building to think. The back of the handout contained summaries of what the different types of prototypes were used for and how they could be built.

5.2.7 Implementation

5.2.7.1 Step 7.0- Implementation

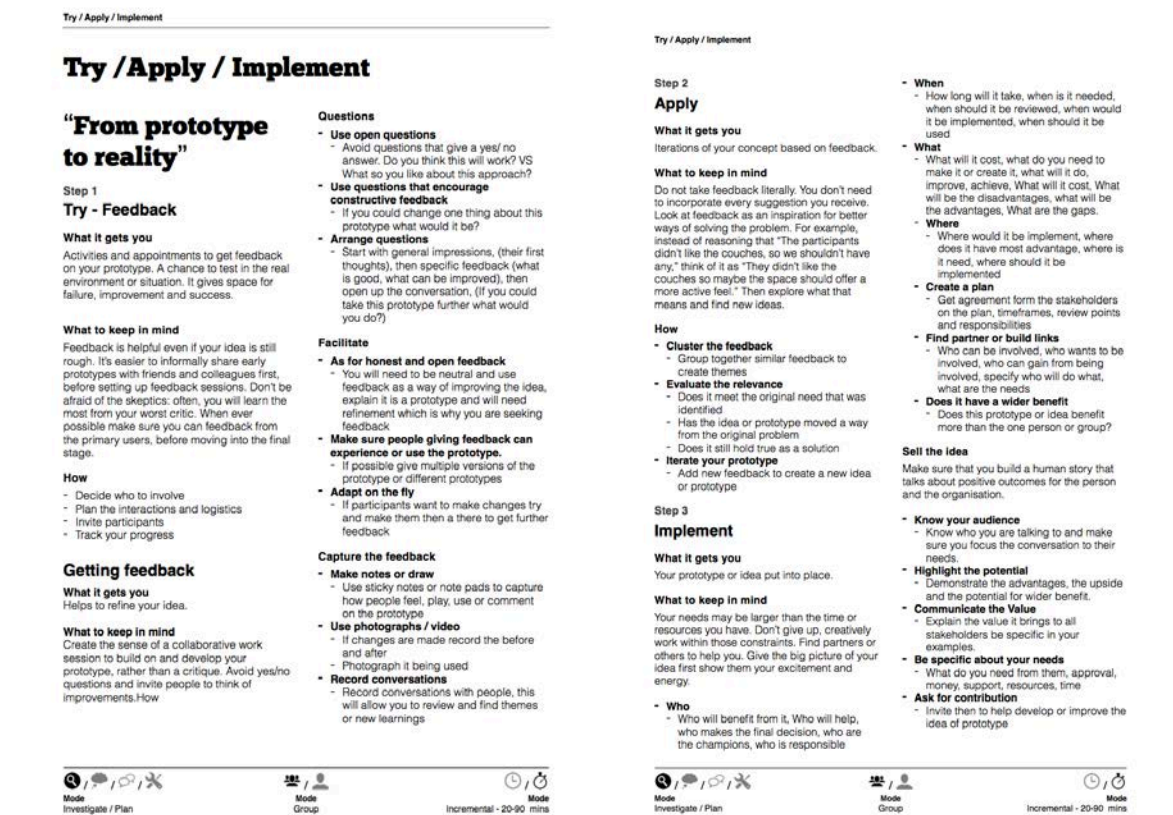


Figure 5.24: Implementation handout

The facilitator introduced the implementation process as an opportunity for one person from each group to move to another group to give feedback or as a potential role-play opportunity. The teams were encouraged to also consider what was needed to implement their prototype into the workplace this included the consideration of planning and making partnerships to increase the probability of a successful outcome. In the last step the groups were reformed and asked to prepare a simple three-minute pitch to sell their idea to the other groups. As each group had been given a different injury or disability profile there were no duplications of ideas between groups.

The groups were given the *Implement* handout Figure 5.24 as a reference. The implementation handout included details about each of the steps in the final processes of try, apply, implement and sell you idea.

5.2.7.2 Step 7.1 - Sell it

Each group gave a three-minute pitch for their final solution to the other groups. The structure of the presentation was informal. The objective of the pitch was for the group to explain the need or barrier and demonstrate the solution that they had developed. Finally demonstrate whether the solution could be used in practice and what would it take to implement it into the training environment. The groups were provided with verbal feedback from the participants from other groups.

5.2.8 Reframing

5.2.8.1 Step 8.0 - Reframing

Reframing

Training for a Job

What can we learn and what can we use from the work environment to help us to assist students in the training environment.

The process used to do a job analysis and adjustment can be used to create reasonable adjustments in training.

A person first

Every person with a disability, impairment, loss or health issue is unique and should be treated as an individual. We should never make assumptions about a person's abilities based on a label or diagnosis. The extent to the barriers, disadvantage or limitations that will exist in the training environment should be assessed on an individual basis.

DISABILITY DISCRIMINATION ACT 1992

Definition of "disability", in relation to a person, means:

- (a) total or partial loss of the person's bodily or mental functions; or
- (b) total or partial loss of a part of the body; or
- (c) the presence in the body of organisms causing disease or illness; or
- (d) the presence in the body of organisms capable of causing disease or illness; or
- (e) the malfunction, malformation or disfigurement of a part of the person's body; or
- (f) a disorder or malfunction that results in the person learning differently from a person without the disorder or malfunction; or
- (g) a disorder, illness or disease that affects a person's thought processes, perception of reality, emotions or judgment or that results in disturbed behaviour;

and includes a disability that:

- (h) presently exists; or
- (i) previously existed but no longer exists; or
- (j) may exist in the future (including because of a genetic predisposition to that disability); or

(k) is imputed to a person.

To avoid doubt, a disability that is otherwise covered by this definition includes behaviour that is a symptom or manifestation of the disability.

Before we make assumptions

EMPLOYMENT

- Is there an employer engaged or is the student in a similar job role?
- This could indicate what is working and what needs adjustment
- Is there an employment agency or employment support available?
- Does the support have knowledge of adjustments or employment options?
- Does the student have a network or support for future employment?
- This could assist you in making adjustments and future employment.
- Are there other students or people with that disability or impairment already working in the industry in a that job role or similar?
- This would indicate that the job can be adjusted or the disability does not effect the inherent job requirements.

Qualification design

- Is there flexibility in the packaging rules?
- What are the core units?
- What are the elective units?
- Can electives be substituted/ replace to reduce barriers or increase access?
- Is the course being delivered and assessed at the correct level?
- Are there any assumptions / practices that align training to employer needs not AQF or qualification level?

Consider qualification design in relation to the concept of the "inherent job duties". If the core units are the inherent skills and knowledge then there should be some flexibility around the elective units.

As with a job it is important to distinguish between what needs to be achieved "inherent job requirements", "training outcome", or "skills and knowledge and how it is achieved, learnt or demonstrated the "process, procedure or equipment used".

AQF LEVEL 1
Application of knowledge and skills
Graduates at this level will apply knowledge and skills to demonstrate autonomy in **highly structured and stable contexts and within narrow parameters.**

AQF LEVEL 2
Application of knowledge and skills
Graduates at this level will apply knowledge and skills to demonstrate autonomy and **limited judgement in structured and stable contexts and within narrow parameters.**

AQF LEVEL 2
Application of knowledge and skills
Graduates at this level will apply knowledge and skills to demonstrate **autonomy and judgement and to take limited responsibility in known and stable contexts within established parameters.**

Barriers

- What barriers exist for the student to be able to participate in training?
- What are the direct and indirect barriers?
- Have you consider assumptions and attitudes as part of the barriers?
- Are there barriers outside of the training environment that may impact on participation or completion.

Empathy

- Have you walked in the person shoes? (the empathy map)
- Have you meet with and discussed with the student and support person's (if appropriate) the students goals and desired outcome of the training?
- Have you discussed what they perceive the barriers to be, have they got ideas of how to make adjustments?

Adjustments

- Have you considered what possible adjustments would need to be made?
- Consider carefully the concept of time and time based training. Adjustments around time should be consider initially in two areas
 - Time based assessments (are they appropriate and relevant to work practices)
 - Time allowed to gain competence. A student may need to re-enrol a number of times before gaining competence this

should not be a barrier to participation and skills acquisition.

- In a competency-based training environment, learners aren't required to study for a specified number of weeks or months; however, your RTO must still be able to identify and explain any significant variations from the time periods described in the AQF. (<http://www.aqf.gov.au>)

Course and qualification integrity

- It is also important to maintain the qualification and course integrity, adjustments should not be made that will
 - Devalue or have negative impact on the course outcomes or course integrity
 - Create an Occupational Health and Safety risk
 - Break or contravene any law or is an unlawful act.

Behaviour and code of conduct

- Appropriate code of conduct and behaviour should be consider within the training environment and the work environment.
- Conduct or behaviour within the training environment that would see a student without disability removed or exited from training then appropriate action or re-training should be taken.
- Consideration should be given to the severity of the action or behaviour, the risk to others or themselves
- If such an act would see an employee with or without a disability dismissed within a work environment then appropriate action or re-training should be taken.

Competency

- The student is in training and as such should be trained appropriately and be given task / duties appropriate to their level of competency.
- Students should not be rushed or pushed to perform duties or task that they are unfamiliar with or uncomfortable doing.
- Students who achieve some competency (eg 40%) have had a

Figure 5.24: Reframing handout

Due to time restriction this section was modified from the original plan. The first step of asking the question "Can this be applied to reasonable adjustment in training?" and presenting a two-minute presentation about what they had learnt through the process was removed.

The reframing handout was given to all participants and the facilitator introduced the concept of reframing. The facilitator gave the example of how a tool, like a laptop, was used on the job to provide spell checking for an individual with dyslexia and this was an example of a natural support provided in the workplace. However if this 'tool' was removed in a training environment and replaced with a hand written test, this could leave the student feeling vulnerable and potential anxious.

The facilitator, using the supporting PowerPoint (appendix 5.1) and this example introduced the concept of qualification design and the idea of inherent job requirements. This example highlighted that it is important to consider what is

being assessed when assessments are designed. This included identifying the core and elective units of a qualification. If an elective unit created a barrier it can be changed, as it may not be an inherent job requirement, unlike the core units.

It is important to distinguish between what needs to be achieved "inherent job requirements" and how it is achieved the "process, procedure or equipment used".

The use of a laptop by a dyslexic student to type up an assignment or test does not disadvantage other students. If the assessment is not directly related to or testing their ability to spell then there is no advantage. Secondly what is an appropriate tool or adjustment that was provided and used in the work environment that should be considered when designing assessment.

The participants were asked to briefly to reflect upon the idea that they had designed adjustments for their own job role and whether these adjustments could be used by student with similar needs?

The remaining group discussion followed the PowerPoint, which included

- A Person first
- Before we make assumptions
 - Employment
 - Bias, assumptions & attitude
 - Consulting with the person
- Ask | Awareness | Action
- Having empathy for students with disability
- Barriers
 - Direct and indirect
- Adjustments
 - Time & competence
 - Reasonable
- Issues related to behaviour and safety
- Success, goals and outcomes
- What needs to be achieved versus how it is achieved
- Using the experience and tools of the PD as a part of that RA process,

The participants had an opportunity to ask questions and discuss these topics. The PD was concluded with the participants completing the second questionnaire; a number of participants also provided verbal feedback.

5.2.9 Questionnaires

Question numbering

Questions will be numbered using the prefix of the questionnaire. For example question Q1.6 is question six from questionnaire one.

Data collection from participants

The data collected from the participants was coded to identify the individual data produced by each participant. The coding had no reference to the participant and does not allow for identification of the participant after the PD session. The coding allowed the data produced to be gathered into participant and group sets. Each of the handouts and the sticky note pads provided to the participants were uniquely coded. The participants were instructed to use only their handouts and sticky notes during the session to allow for data collection. Data was collected individually from 12 participants. The data from participants was used to compare the three different groups or between participants in each of the groups.

Questionnaires

The participants completed 2 questionnaires, Questionnaire 1 before the beginning of the PD session and Questionnaire 2 at the end of the PD session.

5.2.9.1 Questionnaire One

Questionnaire One established the participant's eligibility to participate, pre-PD RA skills and knowledge and previous number of PD sessions attended.

Questions 1.1 and 1.2 were screening questions for eligibility of participants to be included in the research. To be eligible to participate in the research participants had to answer yes to both questions.

Questions 1.3 to 1.9 were questions that established the participants current understanding of RA, skills and knowledge in applying RA, confidence in applying RA and if they had previously identified barriers to applying RA.

Q1.7 could also provide extra data about the participant's:

- Understanding of RA
- Who required RA

- What disability type was identified
- When and how they applied RA
- Possibly why they applied RA

Question 1.10 identified how many PD sessions participants had attended in the past 12 months.

Q1.1 Have you trained trainees in an accredited course module or training package unit in the past 12 months?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q1.2 Do you have the Certificate IV in Workplace Training and Assessment?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q1.3 Have you heard of the term reasonable adjustment?	<input type="checkbox"/> Yes (Go to Q4.) <input type="checkbox"/> No (Go to Q10.)
Q1.4 In your own words what is reasonable adjustment?	
Q1.5 Have you applied reasonable adjustment in the training setting?	<input type="checkbox"/> Yes (Go to Q6) <input type="checkbox"/> No (Go to Q10)
Q1.6 On the following scale indicate how confident you are in applying reasonable adjustment within the training environment?	
<input type="checkbox"/> Very confident <input type="checkbox"/> Some what confident <input type="checkbox"/> Neither confident or unconfident <input type="checkbox"/> Some what unconfident <input type="checkbox"/> Very unconfident	
Q1.7 How did you apply reasonable adjustment?	
Q1.8 Were there any barriers to applying reasonable adjustment in the training environment?	<input type="checkbox"/> Yes (Go to Q9.) <input type="checkbox"/> No (Go to Q10.)
Q1.9 What were the barriers to applying reasonable adjustment?	
Q1.10 How many professional development sessions have you attended in the past 12 months?	

5.2.9.2 Questionnaire two

Questionnaire Two established the participant's post-PD RA skills and knowledge, there experience and

Questions 2.1 to 2.4 identified the participant's post-PD skills and knowledge in RA, confidence in applying RA and the perceived barriers in applying RA. This allowed the pre-PD data to be compared to the post-PD data in the following questions:

- Q1.4 compared to Q2.1
- Q1.6 compared to Q2.2
- Q1.8 compared to Q2.3
- Q1.9 compared to Q2.4

Question 2.5 to 2.16 identified the participant's feelings about the PD in the context of the learning. The questions were designed to establish if there had been any link between the PD and the learning theory reviewed. The questions identified if the participant agreed or disagreed with statements related to the inclusion of learning in the PD session.

These question were included to identify elements of the learning theory reviewed:

- Q2.5 How enjoyable was the PD compared to other PD
 - Validity was measured against Q1.10
- Q2.7 Did the PD allow them to be involved and contribute
- Q2.8 Did the PD allow them to learn from others and their experiences
- Q2.9 Can they apply the new skills and knowledge acquired in to their training role
- Q2.10 Involved learning from the facilitator
- Q2.11 Involved group learning
- Q2.12 Can they apply these new skills and knowledge in the training environment
- Q2.13 Was of it value to the participant in their training role
- Q2.16 Would they recommended the PD to others

These questions identified the development of empathy and RA skills and knowledge:

- Q2.6 Did the PD enabled them to see the student situation and perspective
- Q2.8 Did the PD enabled them learn from others and their experiences
- Q2.14 Did the PD challenge their beliefs about RA
- Q2.15 Did the PD challenge their assumptions about people with disability
- Q2.9 and Q2.12 Did they developed RA skills and knowledge

Question 2.17 allowed the participants to provide further comments or feedback.

Q2.1 In your own words explain what you now understand reasonable adjustment to be?						
Q2.2 How confident would you be in applying reasonable adjustment within the training environment?						
<input type="checkbox"/> Very confident	<input type="checkbox"/> Some what confident	<input type="checkbox"/> Neither confident or unconfident	<input type="checkbox"/> Some what unconfident	<input type="checkbox"/> Very unconfident		
Q2.3 Do you see that there are any barriers to applying reasonable adjustment in the training environment?					<input type="checkbox"/> Yes (Go to Q4.) <input type="checkbox"/> No (Go to Q5.)	
Q2.4 What are the barriers to applying reasonable adjustment?						
From the following statements indicate to what level you agree or disagree with the statement.						
Q2.5 The PD session was more enjoyable than other session/s I have attended in the past 12 months?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree
Q2.6 Did this type of PD allow you to see the student situation and perspective within the training environment?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree
Q2.7 Did the session allow you to be involved and contribute as part of your learning?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree
Q2.8 Did the session allow you to learn from others and their experiences?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree
Q2.9 The PD session provided you with new skills and knowledge applicable to your training role?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree
Q2.10 You learnt more from the facilitator than from the group?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree
Q2.11 You learnt more from the group than from the facilitator?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree
Q2.12 The skills and knowledge I have learnt can be applied to my training environment?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree
Q2.13 The skills and knowledge I have learnt will be of value to me in my training role?						
<input type="checkbox"/> Completely agree	<input type="checkbox"/> Mostly agree	<input type="checkbox"/> Somewhat agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat disagree	<input type="checkbox"/> Mostly disagree	<input type="checkbox"/> Completely disagree

agree						
Q2.14 The training challenged my beliefs about what reasonable adjustment was?						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completely agree	Mostly agree	Somewhat agree	Neutral	Somewhat disagree	Mostly disagree	Completely disagree
Q2.15 The training challenged my assumptions about training people with disabilities?						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completely agree	Mostly agree	Somewhat agree	Neutral	Somewhat disagree	Mostly disagree	Completely disagree
Q2.16 I would recommend this type of PD session to other trainers?						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completely agree	Mostly agree	Somewhat agree	Neutral	Somewhat disagree	Mostly disagree	Completely disagree
Q2.17 Do you have any other comments or feedback?						

5.2.9.3 Ethical Considerations

Ethical considerations were taken into account throughout the research including the storage, ownership and access to research data (Crouch & Pearce, 2012). Information about participants in the research was handled responsibly and ethically. This research adhered to the National Statement on Ethics (The National Health and Medical Research Council the Australian Research Council and the Australian Vice-Chancellors Committee, 2007) and complied with Edith Cowan University's ethics approval. To ensure ethical guidelines were adhered to the following was incorporated into the research:

- Recruitment:
 - The recruitment phase met ethical guidelines with consideration being given to ensure that participants were not coerced into participating.
- Informed consent:
 - Informed consent form was completed by all participants
 - Participants were all adults who were capable of giving their own consent to participate in the research.
 - Participants were given an outline about the research and the research goals prior to participating in the research.
 - Participants were given a summary about data collection, use, transportation and storage.
- Withdrawal from the research:
 - Participants were able to at any stage during the research withdraw from the research and/or remove their consent to the use of any

data that had been collected and identified as being provided directly by them.

- Confidentiality:
 - To ensure that the data was kept anonymous all the questionnaires, and data collected did not require or collect any data that may identify participants directly.
 - There was no collection of participant name, age, gender, place of employment, and course or units being delivered during the research PD session.
 - All data was coded and coding did not identify individuals
- Data collection
 - All data was stored securely and safely
 - Raw data collected was only available to and viewed by the researcher and the researcher's supervisors.

Chapter Six: Results and Discussion

Three focus groups were successfully conducted. The sessions collected substantial data in the form of photographs, drawings, notes, questionnaires and observation notes. The objective of the PD was to explore the roles of design thinking in a PD environment to help participants to understand RA by becoming more empathetic towards students with a disability. This result indicated that the PD session did shift the participants thinking about RA to being more holistic and user focused than prior to the PD. This chapter discusses the collected data and unfolds the findings and arguments. To do so, the following will discuss the research outcome in relevance to the research sub-questions two and three.

Primary Question

How can the design thinking be used as a professional development training methodology for VET Trainers in the area of reasonable adjustment?

Sub-questions

1. What design thinking methods or tools can be used as part of the professional development training in reasonable adjustment?
 2. What changed in the participants understanding of reasonable adjustment after the professional development training?
 3. What elements of learning did the participants perceive the PD supported and developed in reasonable adjustment?
-

Figure 6.0: Research questions

6.1 Understanding RA before and after the PD

This section discusses findings in relevance to sub-question two: What changed in the participants understanding of reasonable adjustment after the professional development training? The following section compares and contrasts the questionnaire answers from before and after PD session. This includes analysis based on observations of participants' use of words, and the changes in their attitudes and behaviour.

Pre-PD understanding of RA

Questionnaire one collected data about the participant's understanding of and application of RA prior to the PD session.

The questionnaire identified that (see Appendix 3.1 for details):

- Training and promotion of RA within RTOs was still required.
- There was confusion about and a lack of confidence by the participants in applying RA.

- The most significant barrier to applying RA identified by participants was staff.

Summary of the pre-PD data revealed:

- 100% participants were eligible to participate in the PD session
- 92% of participants had heard of the term reasonable adjustment
- 83% of participants understood that RA was applicable to delivery and / or assessment of training
- 83% of participants had applied reasonable adjustment in the training environment
 - 64% of the students assisted using RA had an undisclosed learning disability of which 36% had language and literacy needs
- 50% of participants identified that there were barriers to applying reasonable adjustments
 - Barriers summarised into two categories 64% staff and 36% resources
- 50% of participants were somewhat confident in applying reasonable adjustments

All participants were eligible to participate in the PD as they had provided training in the past 12 months and held the Certificate IV in Workplace Training and Assessment. The pre-PD data revealed that 92% of participants had heard of the term RA. This result even though high, is of a concern as all the trainers are active and qualified and should have been exposed to the term RA in training or induction. This result supports the DWEER (2012) recommendations for an increase in training and promotion of the DSE and in particular that RTOs are required to comply with DSE and RA in the VET sector. This recommendation benefits the training provider and students as non-compliance with the Act is unlawful and could see a student making a claim under the DDA, which would make the training provider legally liable (Cumming et al, 2013).

The participants who had heard of the term RA understood that RA was relevant to the modification of training or assessment. However, 80% of participants' did not indicate that they knew that RA applied only to students with disability. The meaning of RA given by most participants was objective with 80% using the term adjusting and student, and 100% referring to the delivery or assessment of training. The majority of the meanings given by participants for RA described the term as a process of "adjusting training for students" but not the meaning of RA or reason for RA. The responses provided little insight into the participants' understanding of the student's situation or the underlying reasons why RA would be applied because of legislation and equity frameworks.

The pre-PD data indicated that 50% of participants were somewhat confident in applying RA. The reporting of "LLN" issues and unspecified reasons (disability) as

the reason for applying RA in the pre-PD data could indicate a lack of discussion, information or understanding of the students needs and support requirements. The lack of understanding, support requirements for students or recognising that they had a disability could indicate limited empathy for students with disability. For example the following comment the “student cannot read & write & will not try” does not indicate why the “student cannot read & write” and “will not try” is subjective and represents trainer’s bias and own attitude. This comment is similar to the types of comments Buchanan, Rigler and Hart (2010) identified as the “inclination to pass moral judgement”. The pre-PD results identified the common barrier in applying RA was staff, in particular staff attitudes, knowledge and work environment.

The pre-PD data supports the findings of O'Connor (1993), Guthrie (2009), Thompson et al. (2012), and Cocks and Thoresen (2013) that lack of support by trainers, negative attitudes to people with disability and the complex work environment of trainers, as being barriers to success for students with disability in training.

Post-PD understanding of RA

By comparing answers from the first and second questionnaires, and observations on participants' use of words as they progressed through the sessions, it was found that the empathetic framework did change participants understanding of reasonable adjustment. The outcome suggests that the PD:

- Enabled the participants to see the students point of view
- Challenged participants' beliefs about reasonable adjustment
- Challenged participants' assumptions about training people with disability
- Created a change in their explanation of reasonable adjustment
- Created change in confidence level of participants in applying reasonable adjustment.
- Changed If barriers to RA were identified and what was identified as a barrier

The PD session shifted the participants thinking about RA to being more holistic and user focused than prior to the PD using:

- A relevant problem, use of personas, video (Story) provided new learning and points of view that challenged the participants beliefs and assumptions
- A problem that allowed the participants to “walk in another person shoes” is one of the elements identified by Marino (2013) that assists people to develop empathy.

- Problem proposed put the participant in the position of the person with the disability, which may have increased the participant's motivation and willingness to find a solution (Marino, 2013).
- The problem was relevant to their work role and used existing participant knowledge (Marino, 2013).

All participants (12) agreed that the PD allowed them to see the student's situation and perspective in the training environment. This result indicates that any RA developed by participants would meet the needs of each student and would not be based on stereotypes or assumed knowledge about the student or disability (Couzens et al., 2015). Seeing the situation from the student's point of view can facilitate understanding and documenting the student's needs. Being able to accommodate the student's needs is essential in applying RA or making a case for unjustifiable hardships by an RTO.

An RTO making a claim of unjustifiable hardship is required:

- To investigate and try to apply RA.
- Must support a claim of unjustifiable hardships with evidence, not assumptions, that to meet the needs of the student would cause the RTO unjustifiable hardships (DSE, 2005; DDA, 1992; Cumming, Dickson & Webster, 2013).

There was some disagreement with Q2.14 and Q2.15:

- Participants 2 and 11 disagreed that the PD challenged their beliefs about reasonable adjustment.
- Participant 2 gave a neutral response and participants 9 and 11 disagreed that the PD challenged their assumptions about training people with disability.

However disagreement does not mean that the PD was not valuable. Disagreement could indicate that the participant was already experienced with and had a positive attitude towards reasonable adjustment and people with disability.

The post-PD data of the barriers revealed an increase in the number of barriers in applying RA compared to the pre-PD data. The major barrier was identified as human resource barriers. Human resource barriers included issues related to staff or processes that required a staff decision or actions. The grouping of process barriers with human resource barriers reflects O'Connor (1993), Guthrie (2009), Thompson et al. (2012), and Cocks and Thoresen (2013) findings that staff

support, attitudes, and the work environment of the trainers will create barriers to success for students with disability in training.

The summary of the results from questionnaire two for section 5.1:

- 100% of participants agreed to some degree that it enabled them to see the student's point of view.
- 83% of participants agreed to some degree that the PD challenged their beliefs about what reasonable adjustment.
- 75% of participants agreed to some degree that the PD challenged their assumptions about training people with disability.
- 92% of participants reported an increase in confidence in being able to apply reasonable adjustments after the PD.
- 50% of participants reported there were barriers in applying RA

Participants understanding of RA

The post-PD responses by participants of understanding of RA were more personalised, human centred and used more empathetic language than the pre-PD responses. The post-PD responses were about the student and achieving an outcome or goal: for example

- helping, adjusting, modifying, assisting individuals, a person, students, candidates, to suit, by being flexible, giving opportunities, using thoughtful and creative thinking to achieve a successful outcome or goal.

Compared to the pre-PD RA explanations that were about the trainer and their role: for example

- Adjusting, changing, to me, my, your, lesson, teaching, assessment, delivery, methods, attendance to make allowances, accommodate, suit, help, students, individual with a need, learning difference, illness, learning disability or physical disability.

Figure 6.1 is a collation of the words used in the participants' responses to Q1.4 and Q 2.1, their understanding of reasonable adjustment before and after the PD session. The participants' responses to Q2.1 were compared with the definitions in Figure 6.2 to allow comparison with the pre-PD responses. Figure 6.1 indicates that the language has changed with a decrease in objective words like training, delivery, adjust and student to the use of personal words like be fair, creative, thoughtful and goal. There was a change in language from being about delivery and assessment and words like 'my' and 'your' that reference the trainer and their practice. Instead Figure 6.1 shows that the majority of the responses are now about someone else's needs and outcome. The only exception to this is the single word response 'legality' by participant 12 as seen in Figure 6.2. Figure 6.1 shows

the use of the term disability or legality has not decreased. There was a decrease in the use of the words that meant 'student' from ten to six as seen in Figure 6.1. However, Figure 6.1 shows the use of the words outcome and goal that were not used in the first set of responses to Q1.4.

Terms definitions	Term used grouped	Frequency After	Frequency Before
Student / Learner	Students / Student / Person / Learner / Candidate	6	10
Disability	Disabilities / Disability / Legality /	5	6
Help / Assist	Suit / Give / Enable / Supporting / Accommodating / Offer other options / Looking at what can be achieved - review goals / Suit depending on /	10	6
Modifying / Making changes / Modification made	Adjusting / ideas used & acceptable ways of implementing / making allowances... changes / making ... changes / plan how to get there / necessary changes	10	10
Training delivered / Training delivery / Assessment method / Certification requirements	Lesson / teaching and assessment / work environment or work role / training & assessment / learning tools or assessment / Skill	5	10
Learning environment	Training environment / environment	3	1
Same basis as those without disability	Be Fair / Ensure	2	2
Outcome focused	Successful outcome / achieve the outcomes / think of the outcome / Looking at what can be achieved - review goals- plan how to get there	4	
Creative words	More ideas / thoughtful & creative thinking	2	
		47	45

Note: terms are group in closet similarity of term or implied meaning in context of the explanation provided.

Figure 6.1 Frequency of RA definition words compared to participants definitions after the PD

	Participant Response After PD	Participant Response Before PD
P1	Reasonably adjusting teaching and assessment requirements to suit individual students	Did not give a response
P2	Adjusting the lesson to meet the requirements for successful outcome	To me it would mean adjusting the lesson within a reasonable variable to suit each student so that each student has a fair chance of understanding by variation.
P3	Adjusting the work environment or work role to suit to the person and ensure it is reasonable and discriminate (sic) (not discriminating)	Adjusting my mode of delivery to suit the need of a student , who may require extra assistance
P4	More ideas & that can be used & acceptable ways of implementing them. Give every student the opportunity to achieve the skill .	Adapting your method of teaching to a variety of students for them all to get the most out of the course you are delivering
P5	Adjusting your training & assessment strategies to enable students with disabilities to achieve the outcomes	To make allowances for students who may have an illness or disability which prevents them from doing assessment with the allocated time frame
P6	Supporting the learner in a training environment by making the necessary	Supporting and making the necessary changes to accommodate student learning

	changes to ensure that any limitations /disabilities are addressed	to accommodate their unique learning differences
P7	Accommodating, making allowances, changing environment	Adjusting conditions to accommodate students in relation to class attendance, assessment, or circumstances that may unfold throughout the unit
P8	Offer other options, think of the outcome, be fair	Not required to give a response
P9	As legality, thoughtful & creative thinking, core units, can change electives	To individually make adjustments to assessments while still maintaining the standards & integrity of that assessment
P10	Looking at what can be achieved - review goals- plan how to get there	Adjusting delivery and assessment to reflect the capabilities of the individual in relation to the criteria of the unit of competency
P11	Adjusting work requirements or learning tools or assessment to suit the candidate's needs, depending on the disability	Making adjustments to existing assessment and methods to help students with learning or physical disabilities
P12	Legality	Adjusting your lessons to suit student needs

Figure 6.2: Post PD session understanding reasonable adjustment responses

<p>Reasonable adjustment in VET is the term applied to modifying the learning environment or making changes to the training delivered to assist a learner with a disability (Queensland VET Development Centre Strategy and Research (Equity), 2010, p.9).</p> <p>'Reasonable adjustment' is a term used in the education, employment and VET sectors to refer to any modification made to the learning environment, certification requirements, training delivery or assessment method used to help students with disability to access and participate in education and training on the same basis as those without disability. (Department of Training and Workforce Development, 2013, p.5)</p> <p>Word List Modifying, access, participate, learning environment, making changes, training, assist, learner, disability, modification, certificate requirements, training delivery, assessment method, help, students, access, participate, education, training, same basis, without disability.</p>
--

Figure 6.3: Keywords used in Reasonable adjustment definitions.

The PD changed the participant's viewpoint

Figure 6.4 shows that all participants agreed that the PD allowed them to see the situation from the student's point of view. Figure 6.4 revealed that participants either 'mostly' (7) or 'strongly' agreed (5) that the PD allowed them to see the student's situation and perspective in the training environment. This can be supported by the data that revealed there were no responses to Q2.1 that included a reference to the trainer like 'me, 'your' or 'my' that were present in the pre-PD response to Q1.4. The responses to Q2.1 were more about the individual student, which indicates a shift in viewpoint by the participant.

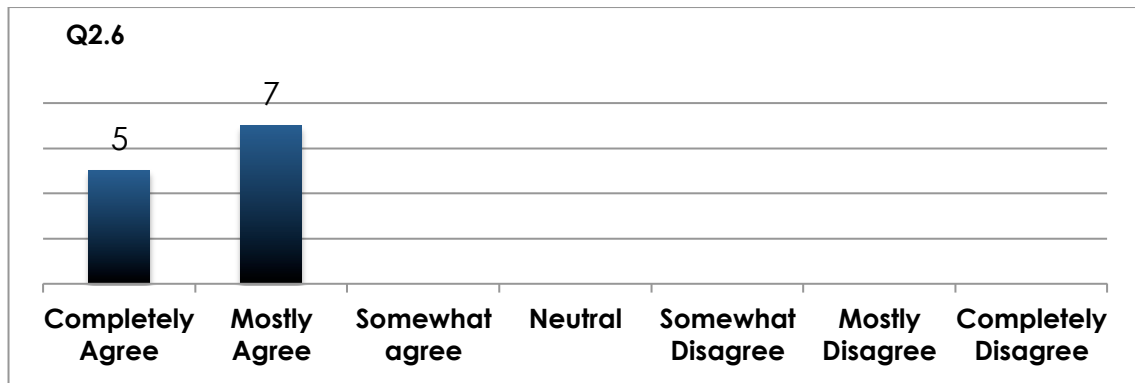


Figure 6.4: Q2.6 Student situation and perspective

The PD participants challenged beliefs or assumptions

Figure 6.5 shows that 83% of the participants agreed that the PD challenged their beliefs about reasonable adjustment. Figure 6.5 summarises the responses by the participants to question Q2.14 'The training challenged my beliefs about what reasonable adjustment was?' Figure 6.5 shows that:

- 83% (10) of the participants agreed the PD had challenged their beliefs about reasonable adjustment.
 - 33% (4) of participants completely agreed
 - 25% (3) of the participants mostly agreed
 - 25% (3) of the participants somewhat agreed
- 17% (2) of the participants disagreed that the PD challenged their beliefs about reasonable adjustment.
 - 8% (1) of the participant somewhat disagreed
 - 8% (1) of participants mostly disagreed

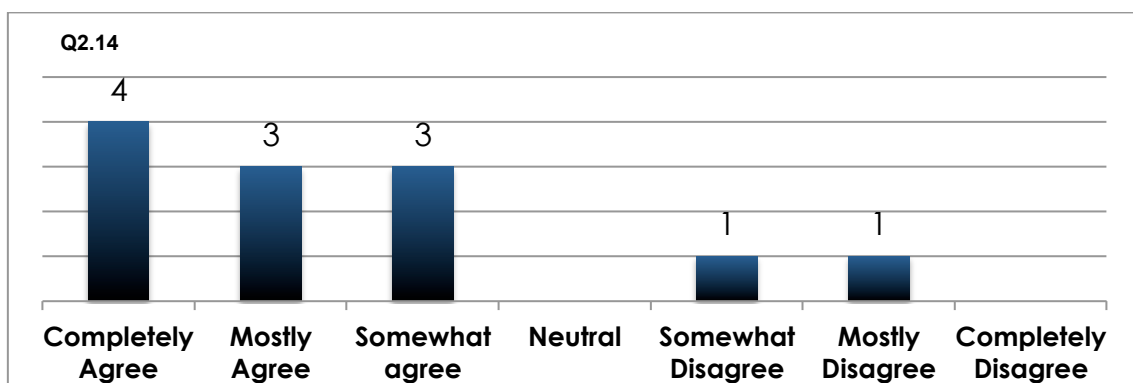


Figure 6.5: Q2.16 challenged my beliefs about what reasonable adjustment

The PD challenged participants existing assumptions about training people with disability. Data from Q2.16 reveals that 75% of the participants reported that the PD challenged their assumptions about training people with disability. Figure 6.6 summarises the responses by the participants to question Q2.15 'The training

challenged my assumptions about training people with disabilities?' Figure 6.6 shows that:

- 75% (9) were challenged
 - 42% (5) of participants completely agreed
 - 33% (4) of the participants agreed to some degree
- 8% (1) gave neutral response
 - 8% (1) of the participant gave a neutral response.
- 17% (2) were not challenged
 - 8% (1) of the participant disagreed to some degree
 - 8% (1) of participants completely disagreed

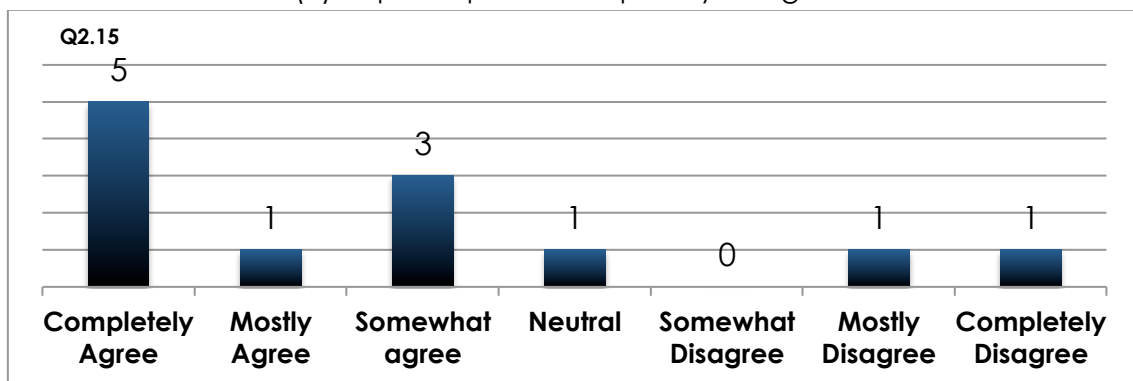
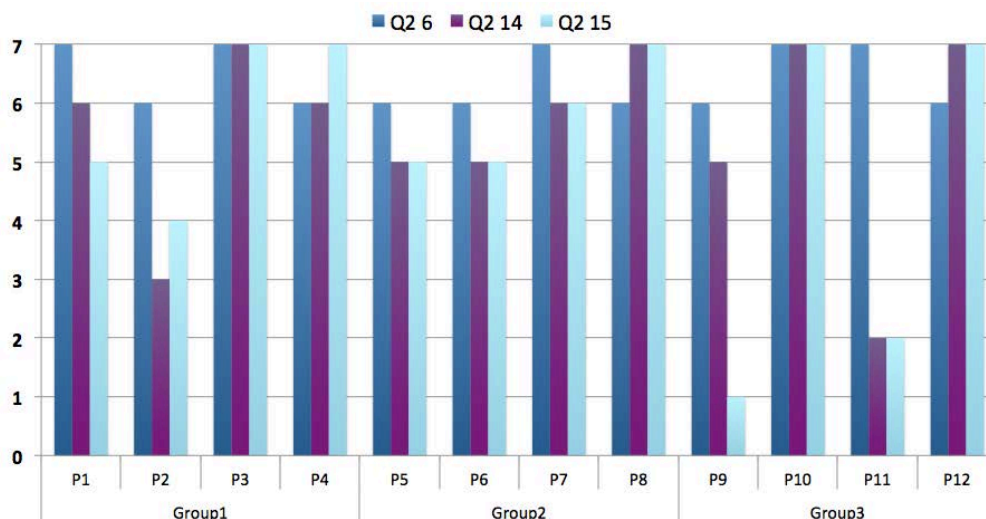


Figure 6.6: Q2.16 Challenged assumptions about training people with disabilities

The participant responses to Q2.6, Q2.14 and Q2.15 revealed that the PD allowed 100% of the participants to see the students point of view, challenged beliefs about reasonable adjustment of 83% the participants and challenged assumptions about training people with disability of 75 % of the participants.

Figure 6.7 reveals that the participants who disagreed with Q2.14 the PD challenged their beliefs about reasonable adjustment were from groups one and three. Figure 6.7 shows the participants who disagreed with Q2.15 the PD challenged their assumptions about training people with disability where both from group three. Figure 6.7 illuminates the significant variance of the responses to the three questions in the group three. Analyses of the group in Figure 6.7 reports that the participants 10 and 12 completely agreed with Q2.14 and Q2.15, participant 9 mostly agreed with Q2.14 and completely disagreed Q2.15 and participant 11 mostly disagreed with Q2.14 and Q2.15. The participant 2 from the group 1 who somewhat disagreed with Q2.14 also reported a neutral response to Q2.15.



Note: 1 = completely disagree, 4 = Neutral and 7 = completely agree

Figure 6.7: Individual response to Q2.6, 2.14 and Q2.15

Figure 6.7 shows that all of the participants who disagreed with either Q2.14 or Q2.15 reported that the PD had enabled them to see the students point view (Q2.6). This is a significant result as it indicates that even if the participant has had prior experience with people with disability or the PD did not challenge their assumptions or beliefs it still enabled them to see the student's point of view. This finding is important as it reflects Couzens et al.'s (2015) idea that an RA is developed to meet the needs of each student not based upon stereotypes or assumed knowledge about the disability or student.

Figure 6.8 shows that participant 2 from group 1 reported a mostly agree for Q2.6 student's point of view and somewhat disagree for Q2.14 and a neutral response to Q2.15. Figure 6.8 shows participant 2's explanation of RA pre and post PD. The start of participant 2's explanation pre-PD and post-PD uses the same three words "adjusting the lesson" however the end of the explanation reveals a slight change from "has a fair chance of understanding by variation" to "meet the requirements for successful outcome". This change could indicate the ability to see the student's point of view, as reported by participant 2 as mostly agreeing to Q2.6. Participant 2's post-PD explanation is about an outcome rather than pre-PD explanation of having a chance. Participant 2's pre-PD and post-PD explanations of RA reveal a focus on the student and needing to make adjustments this may indicate why Participant 2 reported a no challenge response to Q2.14 and a neutral response to Q2.15.

Figure 6.8 shows participant 9 reported a mostly agree for Q2.6 student point of view and somewhat agree for Q2.14 and a completely disagree to Q2.15. Figure 6.8 shows participant 9's explanation of RA pre-PD and post-PD as being quite different. Participant 9's post-PD explanation contains the words 'thoughtful & creative thinking', which are more personal words and 'legality, can change

electives' indicate a new understanding of RA in being able to adjust the qualifications units. This could be further validated by participant 9's somewhat agree response to Q2.14 the PD challenged beliefs about reasonable adjustment. Participant 9's completely disagree response to Q2.15 may indicate prior experience with people with disability as some of the members of the group 3 reported verbally having substantial experience with people with disability.

Figure 6.8 shows participant 11 reported a completely agree for Q2.6 student point of view and mostly disagree for Q2.14 and Q2.15. Figure 6.8 shows participant P11's explanation of RA pre-PD and post-PD are very similar. There is the change in wording of 'students' to 'candidate's', the adding of 'learning tools' and the change from 'learning or physical disabilities' to 'depending on the disability'. Participant P11's second explanation is personalised to a candidate not about generic students and the adding of learning tools recognises that it is the whole process of training not just assessment. This change may indicate the completely agree response by participant 11 to Q2.6 student's point of view. The mostly disagree for Q2.14 and Q2.15 by participant 11 could indicate a small change in their belief about RA as indicate participant 11's post-PD RA explanation by adding 'learning tools or assessment to suit the candidate's needs'. As well as a slightly challenging participant 11's assumptions about training people with disability as indicated in the post-PD RA explanation that individualised the person and their disability, 'candidate's needs, depending on the disability'. Participant 11's response to Q2.14 and Q2.15 may indicate prior experience with people with disability as some of the members of the group 3 reported verbally having substantial experience with people with disability.

	Participant Response After	Participant Response Before	Q2.6	Q2.14	Q2.15
P2	Adjusting the lesson to meet the requirements for successful outcome	To me it would mean adjusting the lesson within a reasonable variable to suit each student so that each student has a fair chance of understanding by variation.	6	3	4
P9	As legality, thoughtful & creative thinking, core units, can change electives	To individually make adjustments to assessments while still maintaining the standards & integrity of that assessment	6	5	1
P11	Adjusting work requirements or learning tools or assessment to suit the candidate's needs, depending on the disability	Making adjustments to existing assessment and methods to help students with learning or physical disabilities	7	2	2

Figure 6.8: Q2.1 responses for participants who report a disagree response to Q2.14 or Q2.15

Figure 6.9 could reveal why all members in group three reported a mostly or completely agree response to Q2.6. Group 3's overall number of words on the:

- Job profile was greater the other groups

- Empathy map was significantly lower than the other groups
- Empathy maps was significantly lower than the group 1 or 2.

Group 3 were able to use their existing knowledge as indicated in the job profile. The low response on the empathy map could relate to the mental health disability allocated to the group as it can be harder for people to understand or conceptualise hidden disabilities (Buchanan et al, 2010). However even though they produced less data on the empathy map Figure 6.9 reveals that:

- Group 3 recorded 22 compared to group one's 28 or groups two's seven themes and headlines.
- Group 3 recorded 11 compared to group one's eight or groups two's zero insights.

These results illustrate that the PD process enabled group 3 to see the point of view of the person with a disability and discover insights about the disability. This is supported by results in Figure 6.7 that all members of Group 3 report agreement with Q2.6.

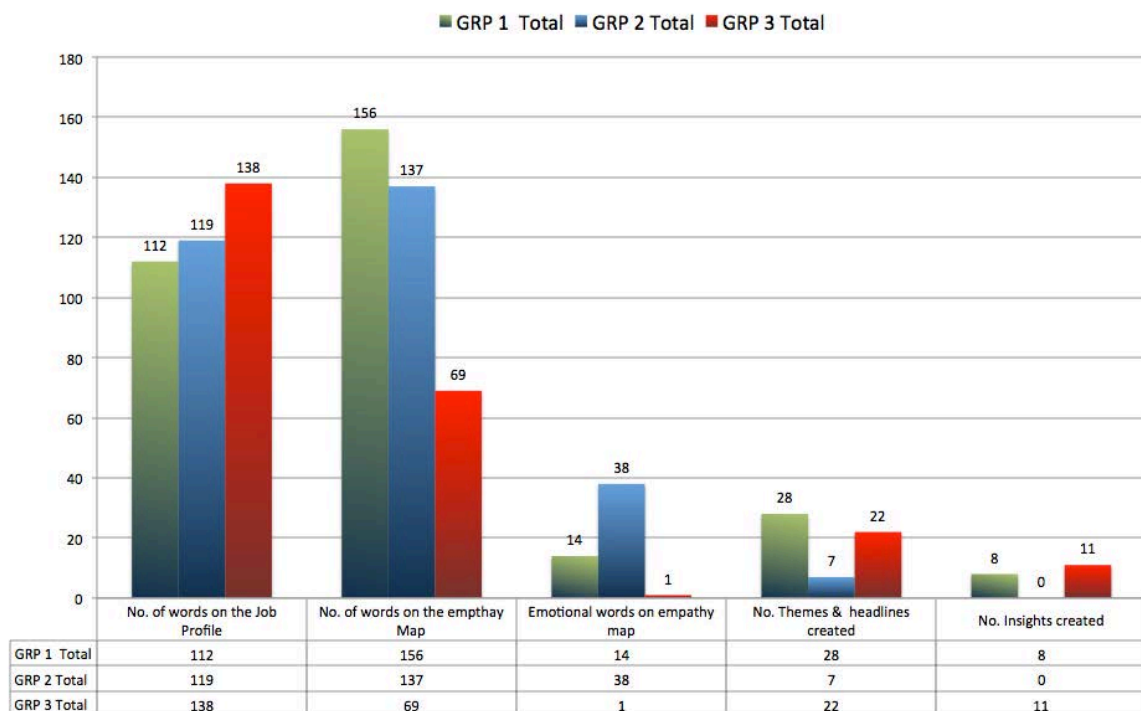
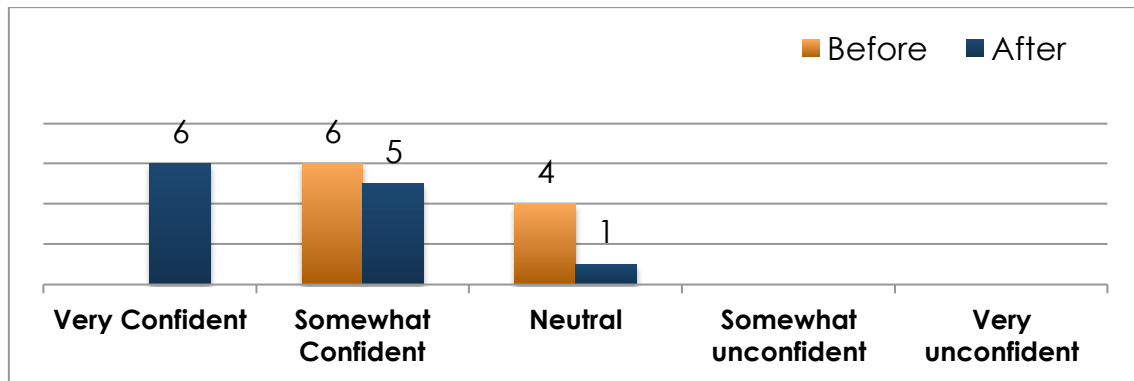


Figure 6.9: Tools and methods data from PD session

Change in confidence in applying RA

The comparison of confidence rating of all participants before and after the PD in Figure 6.10 indicates an increased confidence in applying RA for Q2.2. The number of participants now indicating some level of confidence has increased from 50% to 92%, with 50% of those participants indicating being very confident in applying RA. Participant 9 gave a score of 3.5, which sets their confidence level in the confident range, although their score is indicated on the graph as neutral.



P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
	4	4	3.5	3	4	4		3	4	4	3
4	4	5	4	4	5	5	5	3.5	5	5	4
4	0	1	0.5	1	1	1	5	0.5	1	1	1

Figure 6.10: Pre and Post PD participant confidence rating in applying RA

The analysis of the individual ratings agrees with the total group ratings that there was an increase in confidence in 92% of participants. Figure 6.11 reveals that participant 2 did not change their initial rating of 4; the most significant changes were by participant 1 and 8 who had an shift of 4 and 5 respectively. Participant 8 had not applied RA and was not required to provide a pre-PD rating. Participant 1 indicated they had applied RA but did not give a pre-PD rating for Q1.6. The data indicates that the PD increased confidence in nine participants. Figure 6.10 and Figure 6.11 shows that

- Five participants had a 1 point increase from somewhat to very confident,
- Two participants had a 1 point increase from neutral to somewhat confident,
- One participant had a 0.5 point (3.0 to 3.5) increase towards somewhat confident
- One participant indicating had a 0.5 (3.5 to 4.0) move from neutral to somewhat confident.

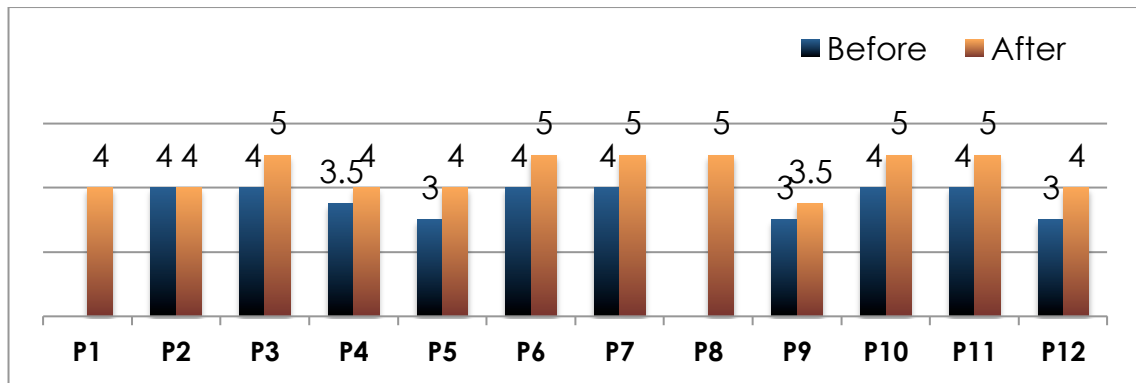


Figure 6.11: Individual Pre and Post PD participant confidence rating in applying RA

Barriers to applying RA

After the PD 50% of the participants reported that there were barriers to applying RA. All participants reported some level of increased confidence in applying RA. An increase in the level of confidence in applying RA by a participant after the PD does influence the participants yes or no response to Q2.3 are there barriers in applying RA.

Figure 6.12 reveals the percentage of participants who identified that there were barriers in being able to apply reasonable adjustment pre-PD and post-PD:

- 60% (6) pre-PD
- 50% (6) post-PD

Figure 6.12 reveals the percentage of participants who identified that there were no barriers in being able to apply reasonable adjustment pre-PD and post-PD:

- 40% (4) pre-PD
- 50% (6) post-PD

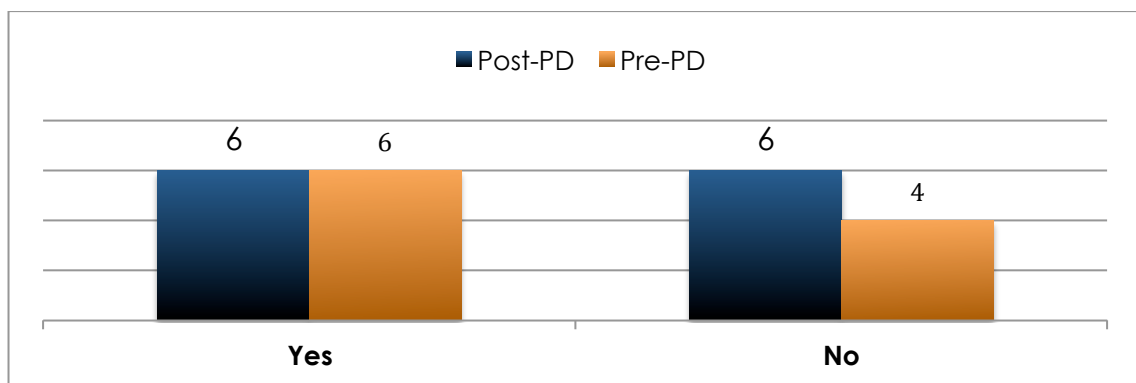


Figure 6.12: Pre and Post PD perception of barriers to reasonable adjustment

Figure 6.13 shows the participants change in confidence rating in applying RA from Q1.6 to Q2.2 and the participants change in their yes or no response to were there barriers to applying RA for Q1.8 and Q2.3. In Figure 6.13 for questions Q1.8 and Q 2.3 the number 1 represents a yes vote.

Participants who changed their responses to Q1.8 and Q2.3

Participants 2's and 4's pre-PD response was 'Yes' and their post-PD response was 'No'. Participant 12's pre-PD response was 'No' and their post-PD response was 'Yes'. Participant 1 was not required to respond to Q1.8 and responded Yes to Q2.3.

The change from yes to no or no to yes by participant 2, 4 and 12 does not seem to be influenced by their confidence level in applying RA. Figure 6.13 reveals that the confidence level of

- Participant 2 remained constant at somewhat confident.
- Participant 4 increased 0.5 of a point from neutral to somewhat confident.
- Participant 12 increased 1 point from neutral to somewhat confident.
-

Participants who did not changed their responses to Q1.8 and Q2.3

Even though all participants had an increase in confidence their response to question Q1.8 and Q2.3 did not change. Therefore, an increase in confidence in applying RA does not influence if or how the participant perceives the existence of barriers when applying RA.

- Participants 3, 5, 8 and 9 remained as a No response.
- Participants 6, 7, 10, 11 and 12 remained as a Yes response

This finding would indicate that an increase in confidence in applying RA may not reduce the perception of barriers in applying RA.

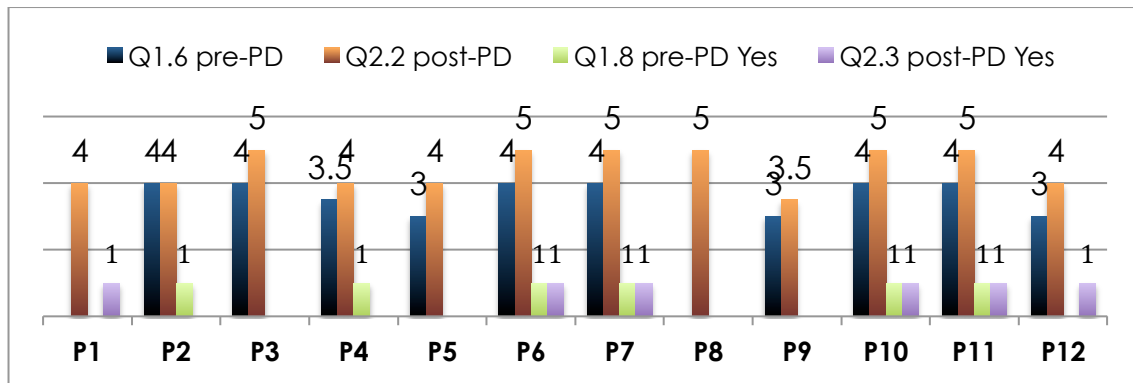


Figure 6.13: Pre and Post PD confidence with RA and Barriers to RA

What types barriers were there to applying RA

The participants identified pre-PD and post-PD that “staff” was the most significant barrier in applying RA. The participants identified a range of barrier in applying RA in VET. The data indicates that human resources barriers represented 61.5% of the barriers identified with the remaining 38.5% being resource associated barriers. The human resources barriers included resource barriers that required a staff member to make a decision about or give approval for the resource.

This result supports the literature review indicating that staff would be one of the contributing factors in creating barriers faced by people with disability accessing VET. The participants also reported barriers identified in the literature such as training and knowledge of staff and an increase in pressure, in particular time related pressure, perceived by VET practitioners.

Figure 6.14 shows the participants identified 9 barrier types in Q2.4 post-PD compared to 7 in Q1.9 pre-PD. The 9 barriers have been grouped into three categories staff, resources and process.

- The staff barriers represented 38.5% in Q2.4 compared to 64% in Q1.9 of all the barriers identified by participants.
 - The responses in Q2.3 that were similar to Q1.9 were staff attitudes, staff understanding, training and time.
 - Industry knowledge from Q1.9 was not present Q2.3.
- The resource barriers represented 38.5% in Q2.3 compared to 36% in Q1.9
 - The responses in Q2.3 that were similar to Q1.9 were equipment, resources and cost same as Q1.9.
- The process barriers represented 23% in Q2.3 were not present in Q1.9 these included policies, unit requirements and inappropriate enrolments.

Types of barriers and identifying barriers in applying RA

The data identified that there was no relationship between confidence and the perception of barriers in applying RA by the participants. The data illustrated that if the barriers identified by the participant are perceived to have a direct or indirect impact on the participant's ability to apply RA then they will respond 'Yes' to there being barriers to applying RA.

Participants 10 and 12 responses to Q2.3 indicates that they perceive other people as a barrier that would affect them directly or indirectly as they responded 'Yes' that there were barriers to Q2.2. The participants 2 and 9 responses to Q2.3 indicates that they perceive other people as a barrier but that would not affect them directly as they responded 'No' there were barriers to Q2.2.

There were six participants who identified in Q2.2 that there were barriers however there were 8 responses to the types of barriers in Q2.3. The data in Figure 6.14 and 6.13 revealed the following:

- No response to Q2.2
 - Participants 2, 3, 4, 5, 8 and 9
- No response to Q2.2 but gave a response to Q2.3
 - Participants 2 and 9 identified other people as a barrier to RA.
 - Participants 2 and 9's 'No' response to Q2.2 could indicate they believed other people did not directly impact their ability to apply RA.
- Yes response to Q2.2
 - Participants 1, 6, 7, 10, 11 and 12
 - Participants 10 and 12 identified the skills, knowledge or attitudes of others as a barrier that would restrict their ability in being able apply RA
 - Participants 1, 6, 7 and 11 identified time, cost, equipment, policies and unit integrity as barriers that would restrict their ability in being able apply RA

Confidence and the perception of RA barrier

The data identified that a change in confidence would not influence a participant's perception of their being a barrier in applying RA. The data identified that the participants who responded 'Yes' to barriers indicated that skills, knowledge or attitudes of others, time, cost, equipment, policies and unit integrity were barriers that would restrict their ability in being able to apply RA.

Grouping the barriers into different sets, helps to illustrate that the perception of barriers may be related to the participant's perception of control or influence upon the barrier. For example if the resource and process barriers in Figure 6.14 were grouped as systemic barriers. Then systemic barriers would represent 61.5% in Q2.3 and staff barriers would decrease from 64.5% in Q1.9 to 38.5% in Q2.3. Therefore, systemic barriers could be considered to be external to the individual and their influence and control. In this example the influence of staff as a barrier would be decreased.

However if 'process barriers' are recognised as being a staff related because they are heavily influenced by why, how and who makes the decision. Then staff barriers and process barriers can be combined together as human resources barriers. This would mean that human resources barriers would represent 61.5% in Q2.3 decrease from 64.5% in Q1.9 and resources barriers would represent 38.5% in Q2.3 increase from 36% in Q1.9. In this grouping the barriers are again external to the participants own control and influence. In this example the influence of staff as a barrier in post-PD data would be relatively consistent with the results from the pre-PD data.

These two examples illustrate that grouping the data in different ways shows that that control and influence upon the barriers is external to the participants. Therefore the perception of a barrier in applying RA by the participants could be related to how much influence or control the individual perceived they have upon that barrier. This would explain why a participant who has an increase in confidence in applying RA would still perceive there to be a barrier to applying RA.

	Response Post-PD	Q2.3	Response Pre-PD
P1	Policies, technology (lack of)	Yes	Not required to respond
P2	People :)	No	Sometimes other staff members were barriers, as they weren't thinking outside the square.
P3		No	
P4		No	We did not have equipment at our disposal
P5		No	
P6	Cost of changing equipment. Time	Yes	Limited resources, time and equipment to accommodate multiple students in one class
P7	The time to implement changes & availability of specialised equipment	Yes	I really wasn't sure if I was being reasonable-just guessing that what I was doing was okay.
P8		No	Not required to respond
P9	If student enrolled correctly & meets the entrance requirements (not always the easy due to class numbers) no barriers	No	
P10	Lecturers need more PD to understand concepts	Yes	What was the industry standard - ie machine speed , Staff understanding of reasonable adjustment
P11	Possibly cost - limit in resources -	Yes	Cost for changes & time on workload

	breaking the integrity of the unit of competency *requirement*							
P12	Staff that are not open minded			Yes				
Summary		Staff, equipment, time, resources, unsure/ understanding, cost, knowledge, policies, Unit requirements, Inappropriate enrolments						
Reason prior to session		No.	%	After Session		No.	%	%
Staff								
Staff		2		People / Staff		2	15%	
Unsure / understanding		2		Understanding / training		1	8%	
Time		2		Time		2	15%	38.5%
Resource barriers								
Knowledge (Industry)		1	64%	Technology / Equipment		2	15%	
Equipment		2		Resources		1	8%	
Resources		1		Cost		2	15%	38.5%
Cost		1	36%					
Process Barriers								
				Policies		1	8%	
				Enrolment / entrance / class size		1	8%	
				Competency Requirements		1	8%	23%
Total		11	100%	Total		13	100%	100%
Human Resources Barriers (staff & process)			61.5 %	Systemic Barriers (process & resource)			61.5%	

Figure 6.14: Post PD session barriers to applying reasonable adjustment

6.2 Elements of Learning

This section illustrates and discusses findings in relevance to sub-question three: What elements of learning did the participants perceive the PD supported and developed in reasonable adjustment? By analysing the participants' answers to the second questionnaire, observations of and discussion with the participants' during the PD sessions it was found that the design thinking methods and tools did facilitate learning. The outcome suggests that the PD:

- Methods and tools created an enjoyable learning experience for the participants
- Would be recommended to other trainers by the participants

- Supported Adult learning principles
- Supported action, experimental and transformational learning
- Enabled the participants to contribute to their on learning
- Enabled participants to learn from others
- Enabled the participant to gain new skills and knowledge that were of value to their role and that could be can be applied in the training environment

Summary of findings from questionnaire one and two for section 5.2:

The data analyse revealed that:

- 100% of the participants reported that to some degree the PD was more enjoyable than other PD attended by the participants.
 - 55% of participants completely agreed
- 100% of the participants reported that to some degree the PD allowed participants to be involved and contribute to the learning experience.
 - 92% of participants completely agreed
- 100% of the participants reported that to some degree the PD allowed participants to learn from others and their experiences.
 - 58% of participants completely agreed
- 100% of the participants reported that to some degree the PD provided participants with new skills and knowledge that were of value in their role
 - 58% of participants completely agreed
- 100% of the participants reported that to some degree the PD provided participants with new skills and knowledge that can be applied in the training environment.
 - 42% of participants completely agreed
- 92% of the participants would recommend this type of PD to others.
 - 83% of participants completely agreed

PD was more enjoyable than other PD attend by the participants

The data from Figure 6.15 reported in the past 12 months that:

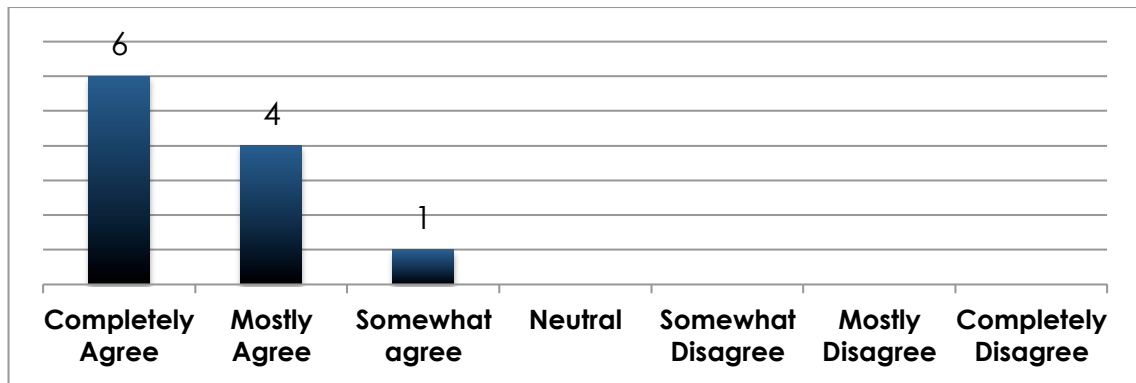
- Participants had attended 90 training sessions in total.
- Participants 1 and 6 had attend 15 PD session being the equal highest number attended
- Participant 8 had attend 4 PD sessions being the lowest number attended
- Participant 4 had attended 0 PD sessions in the past year.

	Number of sessions	%
P1	15	17%
P2	1	1%
P3	5	6%
P4	0	0%
P5	6	7%
P6	15	17%
P7	8	9%
P8	4	4%
P9	12	13%
P10	10	11%
P11	6	7%
P12	8	9%
Total	90	100%

Figure 6.15: Q1.10 Number of PD Sessions attended in the past 12 months.

The results in Figure 6.16 indicate that PD supports Adult-learning principles.

- 100% of all participants agreed that PD was more enjoyable than other PD sessions they had attended in the past 12 months.
 - 55% (6) of participants completely agreed.
 - 36% (4) of participants mostly agreed.
 - 9% (1) of participants somewhat agreed.
- Ratings of the participants who had attend the highest number of PD sessions
 - Participant 1 completely agreed.
 - Participant 6 mostly agreed.
- The PD provided for the learners need for satisfactions and motivation for learning, which is linked to enjoyment.
- This result shows that the PD enabled enjoyment, which is one of the four elements of the internal payoff identified by Wlodkowski (2010). Wlodkowski considers that creating an environment for learning that is pleasurable and enjoyable for the participants is the "sine qua non" of adult learning.
- This result shows that the PD created a learning environment that was safe, positive and fun and supported the emotional element that contributes to learning and the learning outcome. Clapper (2010) identified these qualities as key in supporting and enhancing adult learning.



Note: N=11 as participant 2 was not eligible to answer this question.

Figure 6.16: Q2.5 PD was more Enjoyable compared to other sessions attended?

Able to be involved and contribute to the learning experience

The results in Figure 6.17 indicate that the PD supported learning.

- 100% of all participants agreed that the PD allowed them to be involved and contribute to the learning experience.
 - 92% (11) of participants completely agreed
 - 8% (1) of participants somewhat agreed

This result shows that the PD confirms and supports a few important learning concepts:

- Owen's (2007) suggestion that design thinking is a team-based approach that allows individuals to contribute and participate.
- The constructivist view of learning that learning is constructed individually and socially through engagement with the experience (Merriam et al., 2007)
- Enabled participants some control and autonomy in the learning process and could use their skills and knowledge as part of the learning process (Knowles et al., 2014).

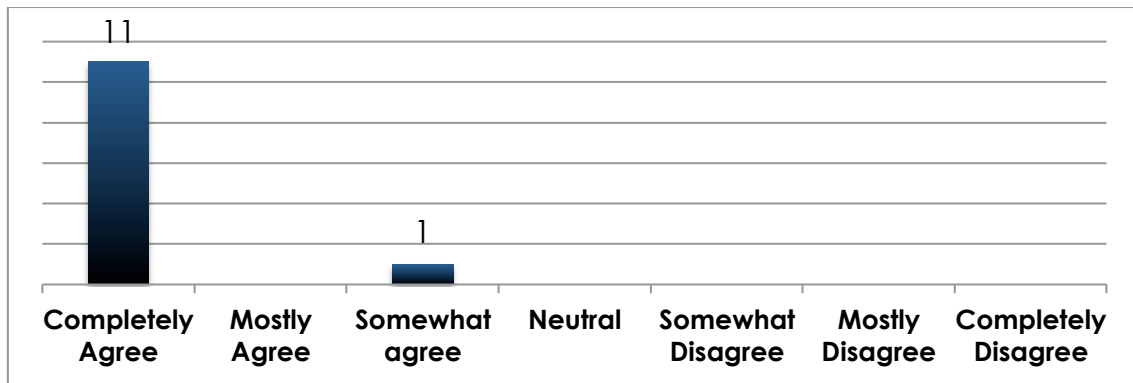


Figure 6.17: Q2.7 PD allowed being involved and contributing to the learning experience

Learnt from others and their experiences

The results in Figure 6.18 indicate that the PD supported learning.

- 100% of all participants agreed that the PD allowed them to learn from others and their experiences.
 - 58% (7) of participants completely agreed.
 - 25% (3) of participants mostly agreed.
 - 17% (2) of participants somewhat agreed that the PD session allowed them to learn from others and their experiences.

This result shows that the PD supports the constructivist view of learning that learning is constructed socially through engagement with the experience (Merriam et al., 2007). This result also shows that the PD enabled learning through discussion, which is part of the learning process of transformational, experiential, and action learning. This concept was discussed by Zuber-Skerritt (2001) and Merriam et al (2007).

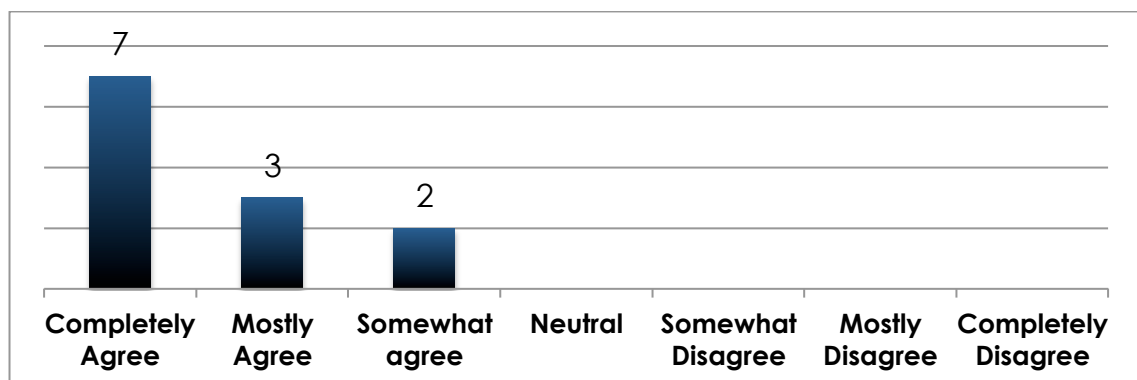


Figure 6.18: Q2.8 PD allowed learning from others and their experiences

Provided new skills and knowledge that were of value in their role

The results in Figure 6.19 indicate that the PD provided the participants with new skills and knowledge that were of a value to their work role.

- 100% of all participants agreed that the PD provided skills and knowledge learnt would be of a value to their training role.
- 58% (7) of participants completely agreed
- 42% (5) of participants mostly agreed that the PD
- This result shows that the PD supported Adult learning principles because the new skills and knowledge had value, were relevant and were a requirement of their role (Knowles et al., 2014).
- The Problem posed in the PD was relevant to the participants' role.
- The PD was problem based, which provided participants with skills and knowledge enabling them to develop a solution to a problem.
 - Problem based learning supports Adult learning principle, experiential, action and transformational learning (Merriam et al., 2007).

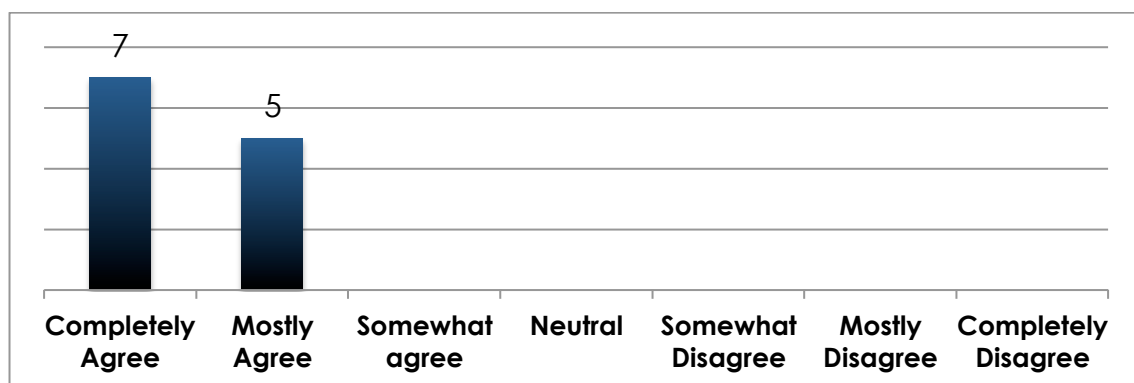


Figure 6.19: Q2.13 Skills and knowledge learnt will be of value to training role

Provided new skills and knowledge applied in the training environment.

The results in Figure 6.20 indicate that the PD provided the participants with new skills and knowledge that could be applied in the training environment.

- 100% of all participants agreed that the PD provided new skills and knowledge that could be applied in the training environment.
 - 42% (5) of participants completely agreed,
 - 50% (6) of participants mostly agreed
 - 8% (1) of participants somewhat agreed.
- The Problem posed in the PD was contextualised for the training environment.

- The PD was problem based, which provided participants with skills and knowledge enabling them to develop a training based solution to the problem:
 - Problem based learning supports Adult learning principles, experiential, action and transformational learning (Merriam et al., 2007).
 - The reframing process enabled discussion and reflection on the learning in the workplace and transferring that to a training context (Zuber-Skerritt, 2001; Merriam et al., 2007).

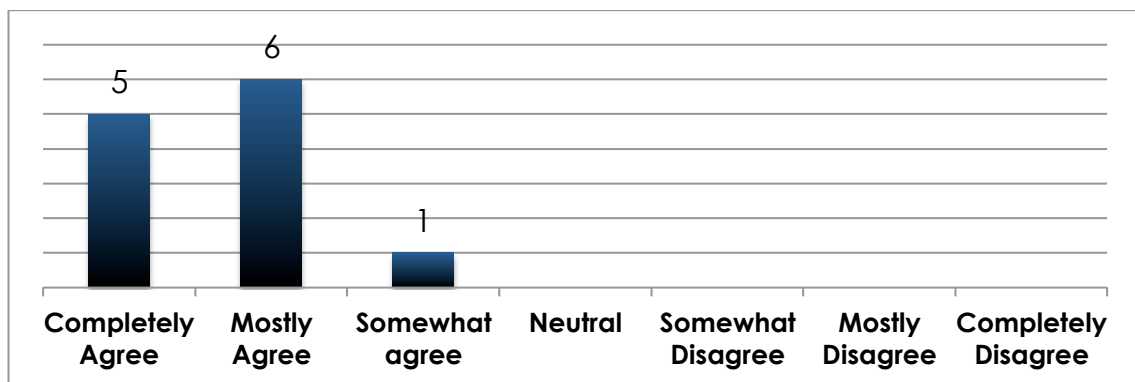


Figure 6.20: Q2.9 provided new skills and knowledge that can be applied in the training environment.

Learnt from the facilitator and the group

The results from Q2.10 and Q.11 revealed that the participants did learn from the facilitator and the group members.

Learnt from the facilitator

The results in Figure 6.21 demonstrate that the PD enabled learning from the facilitator, which supports the facilitator role in Adult Learning and design thinking. The results in Figure 6.21 indicate that:

- 100% of all participants agreed that during the PD they learnt more from the facilitator than from the group.
 - 33% of participants completely agreed
 - 50% of participants mostly agreed
 - 17% of participants somewhat agreed
- Facilitator's role in design thinking is to facilitate the process, provide guidance, give clarity when required and to keep the process moving (Ney & Verweij, 2014).

- Adult Learning Principle Four recommends that facilitator provide support, explanation and direction to the learner.
- In the Adult Learning Principle Six Wlodkowski suggests that the Facilitator should have skills and knowledge that are of benefit to learners and be able to convey those to the learners.
- In transformational learning the facilitator should be a “guide, cheerleader, challenger and supporter during” the learning process (Merriam et al., 2007, p. 138)

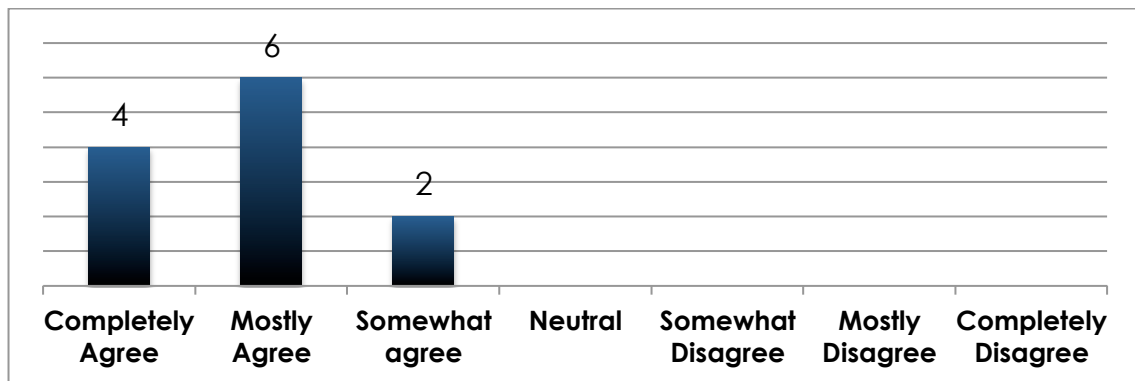


Figure 6.21. Q2.10 learnt more from the facilitator than from the group

Learnt from the group

The results in Figure 6.22 demonstrates that the PD enabled learning from other members of the group which supports action, experiential and transformational learning. The results in Figure 6.22 indicate that:

- 75% of participants agreed that they learnt more from the group than the facilitator
 - 17% of participants mostly agreed
 - 42% of participants somewhat agreed,
 - 17% of participants were neutral
- 25% of participants disagreed that they learnt more from the group than the facilitator
 - 17% somewhat disagreed
 - 8% completely disagreed.
- The result in Figure 6.22 for Q2.10 revealed a greater distribution of the responses ranging from completely agrees to completely disagree than the results in Figure 6.21.

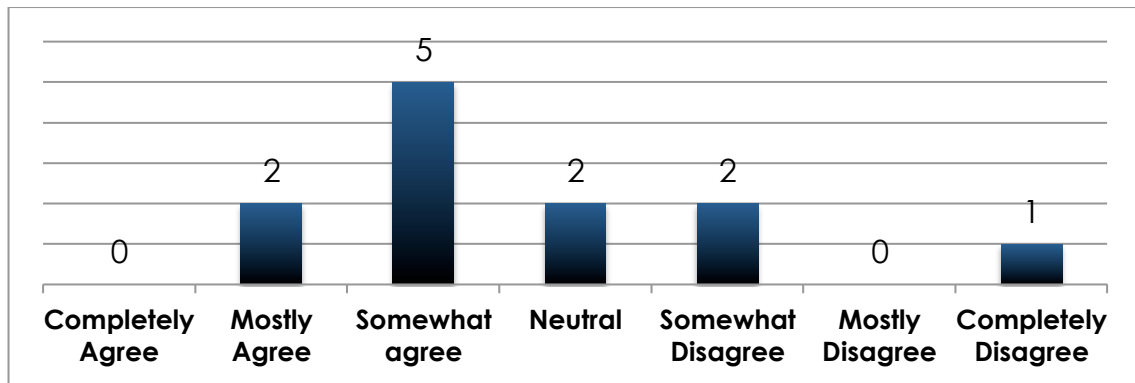


Figure 6.22: Q2.11 Learnt more from the group than from the facilitator

Verbal reports from group one members indicate some disagreement and frustration within the group. The ratings from group one for learning from other group members were neutral (2), somewhat disagree (1) to completely disagreed (1). These results and the verbal report supports Marino (2013) who identified that when using empathy in team environments that teaming can occur, which includes conflict or disagreement within a group. This conflict could be the reason for participant one's completely disagree rating for Q2.11.

The results in Q2.10 and Q2.11 are in conflict with each other. The participants were required to indicate if they learnt more from the facilitator or the group. Ideally the results in Q2.10 should be the opposite of Q2.11. Figure 6.23 shows the individual responses of participants in their groups to the questions Q2.10 and Q2.11.

Ney and Verweij (2014) recommend that novice design thinkers need to be supported by the facilitator during the design thinking process (2012). The results of Figure 6.23 indicate 67% of participants learnt more from the facilitator than from group members.

Figure 6.23 reports that:

- 75% (9) of participants indicated higher rating for learning from the facilitator than the group
- 8% (1) of participants indicated higher rating for learning from the group than the facilitator
- 17% (2) of participants indicated equal rating for learning from the facilitator and the group

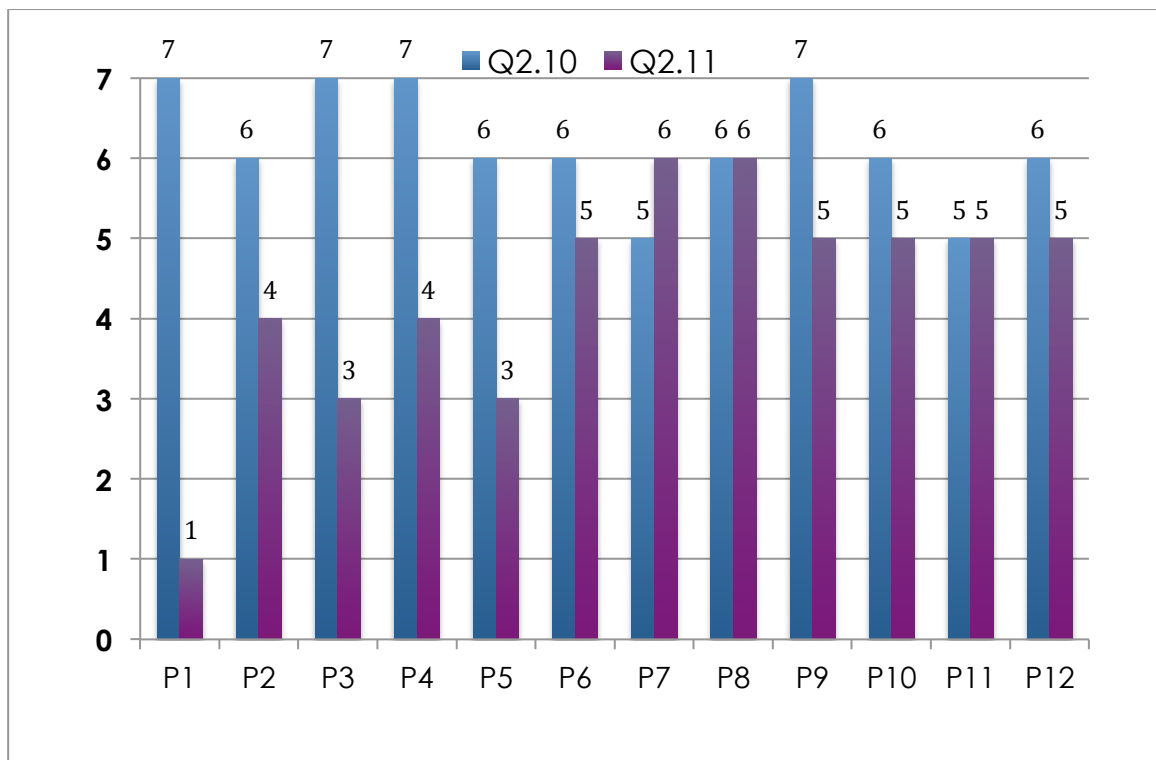


Figure 6.23: Adjusted results for Q2.10 VS Q.2.11

Recommend this type of PD to others.

The results in Figure 6.24 demonstrate that 92% of participants would recommend the PD to other trainers. Figure 6.24 indicates that:

- 92% of all participants agreed to some degree that they would recommend this type of PD to other trainers.
 - 83% (10) of participants completely agreed.
 - 8% (1) of participants mostly agreed.
 - 8% (1) of participants gave a neutral response.

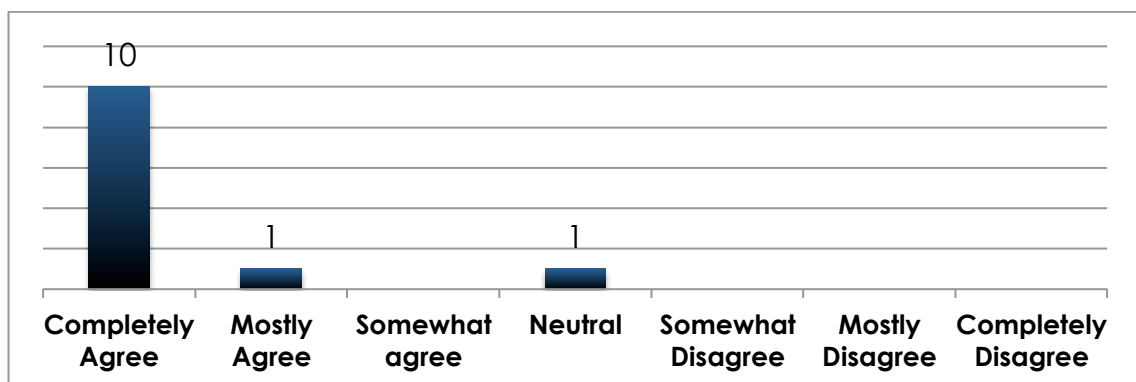


Figure 6.24: Q2. 16 Recommend this type of PD session to others

Chapter Seven: Findings

Design thinking as a professional development method and tool

Findings and data from the research concluded that design thinking is an effective approach to be used as a PD process for RA. This chapter discusses the findings from the PD sessions to explore the role of design thinking in building empathy among VET trainers to assist them to understand RA by addressing the sub-questions. This will address the research's main research question: How can the design thinking be used as professional development training methodology for VET Trainers in the area of reasonable adjustment? To do so, this chapter will consider within the PD session the:

- Inclusion and role of selected learning theory.
- Selection and design of the methods and tools.
- Role of empathy in understanding and applying RA
- Role of the facilitator and the Design thinking model.

The purpose of PD is the development of new skills and knowledge that are relevant and valuable to the learner and their organisation. Thus, the engagement of adult learners and learning are key considerations of PD. This is further explored in relation to how the role of learning contributes to the development of empathy and how empathy contributes to the development of skills and knowledge in RA. The findings from the PD session confirm that learning occurred during the PD session for the participants. The questionnaires data, artefacts from the PD session, facilitator's observations and discussions with participants revealed that the PD session:

- Enabled participants to develop empathy for people with disability.
- Enabled beliefs and assumptions to be challenged.
- Supported learning of new skills and knowledge.
- Enabled participants to develop a solution to an RA problem.

The methods and tools that were used during the PD session enabled the inclusion of learning theory, the development of empathy and skills and knowledge in RA in the participants. Among these, the methods that were observed to achieve the goals of helping participants to understand RA are:

- Story of injured employee
- Framing of the problems context
- Job Profile
- Injury profile

- Empathy Map
- Insights
- Problem statement
- The use of video for story telling
- Ideation
- Prototyping

The research indicated that the success of the PD session was also related to:

- The skills and knowledge of the facilitator
- The empathy practiced by the facilitator
- The role of empathy in the design of the PD

The research revealed that the use of design thinking in the PD session

- Provided a human centred approach to solving an RA problem
- Enabled an experiential, team orientated, action based activity that seeks new insights and realisation to develop a solution to a RA problem.
- Facilitated the learning of skills and knowledge in RA
- Added complexity to the PD process

7.1 Design Thinking and the learning process

Design thinking is traditionally applied as a process to generate solutions to a problem. Design thinking was identified as being an active, reflective and nonlinear process, which can provide new experiences and knowledge. The design thinking process can enable participants to build on their existing reality, change their view of the world and their frames of reference. The design of the PD session and inclusion of design thinking was guided by the principle that “learning is a complex phenomenon that defies description by any one model” (Knowles et al., 2014, pp. 200-201) and that there is no one learning theory that would be able to address the needs of all learners in all environments (Docking, 1998; Fenwick & Tennant, 2004). This section presents and discusses the findings and how designs thinking processes, methods or tools supported learning and PD in reasonable adjustment. This section therefore addresses the sub-questions “What changed in the participants understanding of reasonable adjustment after the professional development training?” and “What elements of learning did the participants perceive the PD supported and developed in reasonable adjustment?” and by analysing the ways design thinking helped in building empathy among the participants.

The research findings support the research's initial line of enquiry that design thinking had the capacity to support learning. The literature review revealed that there was no one learning theory that would fit completely or neatly with design thinking. This research contributes to the findings of Wetzler (2013) that design thinking is a complementary process to action learning. Furthermore, the research established that design thinking can also support experiential and transformational learning, and adult learning principles. The research adds further support to the existing view that design thinking's ability to develop skills and knowledge ahead of its ability to develop solutions and innovation (Norman, 2000; Wetzler, 2013; Ney and Verweij, 2014). The conclusion can be drawn that using design thinking for PD in RA provides positive benefits to the process of learning, the learner and the learning experience.

The following findings and artefacts from the PD indicate the presence of learning and learning theories in the PD session. Furthermore, the findings show that a single method or tool used in the PD can support more than one learning theory. This establishes relevance to the concept of there being more than one learning theory present and supported during the design thinking process and the PD. This implies that multiple learning approaches and activities facilitate PD in RA.

7.1.1 Adult learning

My research showed that the inclusion of andragogy allowed participants to be open to new thinking and develop empathy for people with disability. The inclusion of adult learning principles established a positive connection between the learner and the learning. This positive connection assisted participants to be open to new learning. The observations from the research was that being open allowed the participants to consider learning that challenged their existing skills and knowledge or frames of reference. Adult learning informed the design and delivery of the PD in the :

- Participant enrolment process and eligibility.
- Content of the PD was relevant to the roles of the participants.
- Content of the PD was relevant to the needs of the RTO.
- Process, methods and tools used.

The research findings revealed that the PD recognised the needs of the participant and the organisation, the prior experience of the participants, the current skills and knowledge of the participants, and incorporated elements of the core adult principles of adult learning. Further to this the findings show that a participant's "willingness" to participate in the PD was the first step towards understanding RA. Marino (2013) suggested that willingness acts as a trigger to assist in the development of empathy. The research findings and data revealed

even when the PD was unclear or challenging there was a “willingness” by participants to continue with the PD. Their “willingness” to be engaged in the PD enabled participants to develop empathy for people with disability, which in turn enabled skills and knowledge in RA.

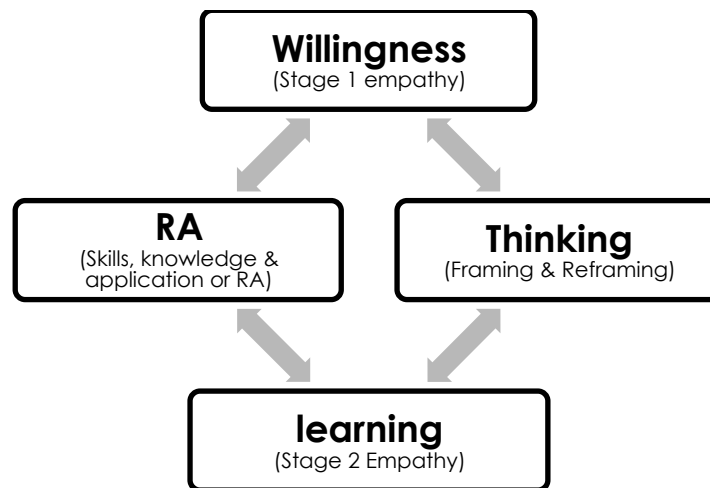


Figure 7.1: The development of RA skills and knowledge

Figure 7.1 illustrates how empathy played a role in the development of skills and knowledge in RA. The “willingness” to be part of the PD and engage in the process meant that they were open to new learning. The PD used design thinking to engage affective and cognitive processes through thinking and learning to build empathy. The resulting increased empathy enhanced the participant’s understanding and application of RA. Therefore as participants RA knowledge developed so did their willingness to challenge their thinking, to learn more and experiment with applying RA thus continuing the cycle.

According to Knowles, Holton & Swanson (2005, p. 146), adult learning is applied and could be used with a degree of flexibility. This flexibility allowed adult learning theory to be used as needed to support learners in the PD. The inclusion of the core adult learning principles were revealed in participant’s comments, in the artefacts they produced during the sessions, observations of their individual and group work.

- **Adult Learning Principle One**, “learners need to know”, includes the premise that learners need to know how they will learn, what they will learn and why is it important to them. The following processes and artefacts from the research support the inclusion in the PD of elements of principle one.

The PD’s enrolment process was voluntary and provided information to the participants about the subject, reason and delivery method for the PD. Therefore

rather than the participants being requested to attend as work related activity the participants opted in to the PD. This voluntary participation in the PD indicated an interest in or relevance of the PD to the participants. Before the PD started the participants completed the first framing activity, questionnaire one. The questions directed the participants to consider and document their current understanding and experience with RA. Following this the participants introduced themselves to the group including outlining their experience in training, in RA and what they expected from the session. This process constructed the how, what and why of principle one. Furthermore, the introduction process revealed to the other participants, the subject matter differences, situational differences and individual learner differences of other participants in the PD session.

The voluntary enrolment and participation in the PD was the participant willingness that created openness to new learning. During the research participant openness was observed when they reconsidered their understanding of RA and how they had previously approached RA. Participant eleven's comment was that she or he needed "more time for explanation", participant seven found the process "confusing...but...after explanation it was fine" and participant six expressed that there were "new ideas & innovation to think about". Even though the participants felt challenged or overwhelmed by the process their willingness to tolerate ambiguity and discomfort allowed them to stay open to the possibility of learning. Design thinking introduced a new dimension to the PD that allowed the participants' thinking and frames of reference to be challenged in a non-threatening and supportive environment. Because of this new dimension the participants required more support than expected from the facilitator during the PD. The need for support by the participants reveals adult learning principle two, the "Self concept of the learner".

- **Adult Learning Principle Two**, "Self concept of the learner", includes the premise of self-directed learning and autonomy, and shows that learners require different types of learning guidance ranging from dependant through to self-directed. The following findings and results from the research support the inclusion in the PD of elements of principle two.

The participants reported in the final questionnaire that they were able to be involved and contribute to their own learning. The handouts given to the participants during the PD provided detailed information, examples and instructions explaining the process and further information to assist them to complete the steps in the PD. These handouts allowed individuals and groups to move ahead or to use the handouts for support and reflection.

The learning theories and design thinking literature identify the essential role of a coach or facilitator in the process. Participant seven commented that " There were[sic] a few things I found confusing but after individual explanation it was fine." Like participant seven, other individuals and the groups required support

from the facilitator, which included clarification, practical assistance and direction during the design thinking process. Support was also provided in the form of answering questions, guiding the reframing of thinking in the areas of VET and disability to assist with the development of empathy and RA skills and knowledge. My observations of and discussions with the participants indicated that the level of support they required was dependent upon how the PD enabled them to use their existing skills, knowledge and experience.

- **Adult Learning Principle Three**, “Prior experience of the learner”, includes the premise that experience will create differences amongst learners, be resource for learning, be the foundations of the adult's identity and create the frame of reference used by the learner, which can inhibit or define new learning. The following findings and results from the research support the inclusion in the PD of elements of principle three.

My research indicates that there was a relationship between “prior experience of the learner” and “learner's need to know”. The wider the gap between the participants' current frames of reference and what was needed to achieve an understanding RA, the more support they required.

The design thinking methods and tools were designed to create and allow the participants to identify gaps between current skills and knowledge and required skills and knowledge. These gaps then became opportunities to reframe and challenge current frames of reference. For example the story of the injured employee reframed RA from being a student and training only problem to being relevant to the workplace as well. The story articulated the concept of RA as a process that already existed in workplaces as “light duties” and would be seen by the participants as being real and relevant to them. This challenged them to think about RA as having relevance for every person and the whole organisation. This new learning and insight is revealed in the benefits expressed by the participants and the impact they thought the PD could have on their organisation. Participant seven commented, “I think all staff should participate in this presentation”, Participant nine comments included “all staff need this” and “[the PD] will help dissolve discrimination in the workplace.” However the identification and desire to close the gap dependent upon and related to the individual participant's “readiness to learn.”

- **Adult Learning Principle Four**, “Readiness to learn”, includes the premise that the readiness to learn is dependent upon the learner's life situation and that needing to know the new skill or knowledge is an inherent part of their life. The following findings and results from the research supports the inclusion in the PD of elements of principle four:

The introduction to the PD established the legal framework and necessity for RA in their work role as a VET trainer, this included a summary of the DDA and DSE. However previous experience had identified that the legal approach would not create the “readiness to learn” that was required for the participants to understand and apply RA. Therefore, the focus of the PD was a problem that involved the participant. This approach reframed the having to develop an understanding and applying RA for an unknown person to the participant themselves. This approach was reported in the findings to enable 100% of the participants to develop empathy for a person with disability using the “walk in somebody's else's shoes” approach.

However, what became evident from the PD was their "readiness to learn" was supported by the participants' willingness to participate and their attendance indicated an interest in the subject of disability or RA. The results of the first questionnaire reveal that of the 12 participants 11 had previously applied RA. Discussions with individuals and groups during the PD also revealed that a number of the participants currently had students who required RA. Observations and discussions with groups and the findings from the final questionnaire reveal that there were issues within the groups related to differences between participants' readiness to learn and their perceived relevance of the PD. The differences included the current level of the skills and knowledge about RA, confusion and understanding of the process and individual frames of reference. One strategy used to illustrate relevance was to discuss and use examples of the benefits that RA can create for students without disability. These discussions would lead to participants providing examples of current situations or problems that required a solution.

- **Adult Learning Principle Five**, “Orientation to learning”, includes the premise that learning is most relevant when it solves a problem that is real and exists in the context of the learner this includes challenging previously held frames of reference. The following findings and results from the research support the inclusion in the PD of elements of principle five.

The results from questionnaire two revealed that the PD developed skills, knowledge and empathy that assisted participants' to see the students perspective, was of value and could be applied in their work role. Even though the proposed problem was theoretical it provided a focus for learning, understanding, applying and reflecting upon the application of RA. During the PD participants were observed reflecting, contextualising and transferring learning and their understanding of RA by asking questions that related to current students. A participant from group one gave the example of video lessons and explanations provided to a student on an iPad that could be used during class as an RA. However, the participant explained that even though it was appropriate and effective the student would not use the RA. This observation by the participant was reframed into questions by the facilitator. “Who else in the class

uses the videos on an iPad?" and "would this also be an effective method of training for other students?" These questions used an empathetic perspective which allowed the participant to rethink the reasons and to see the student reasons for why he or she would "not use" the RA. Then after reframing their observation the participant had the following insights. Because the student looked and felt "different" therefore they would not use the iPad, that the videos would be of benefit to other students and allowing other students to use the videos would remove the "difference" and increase the benefit of the applied RA for all students. This application to real problems was supported by participant four's comment "Helped with a student I have at present."

- **Adult Learning Principle Six**, "Motivation to learn", includes the premise that learning is more motivating if it helps to solve a problem or creates an advantage for the learner that leads to an internal or external reward or "payoff". The following findings and results from the research support the inclusion in the PD of elements of principle six.

Enjoyment is not often considered relevant for adult learning and as such is often forgotten or left out when designing learning activities. Adult learning theory suggests that learning should engage and motivate adult learners. Clapper (2010) proposes that a positive emotional learning experience assist with engagement, participation and retention of learning. All of the participants indicate in questionnaire two that they valued and enjoyed the PD. Furthermore, the following participant comments express that the participants' enjoyed and valued the PD session; Participant ten "Great morning", participant seven "Yeah, quite fun, opened my eyes" and "thanks for everything!!", and participant six "thank you!" Enjoyment and value are examples of internal payoffs that adult learners value beyond the external reward of training.

The external rewards that adult learners seek include training that is relevant to them and can provide them with a solution to a problem. The findings and examples from the research identified that the PD solved individual problems experienced by the participants. However incorporating design thinking into the PD provided the participants with a methodology for investigating, designing and implementing RA. This was a motivator for learning as the PD provided expectancy (new learning), instrumentality (solved a problem) and valence (importance and relevance) for the participant. The use of design thinking as part of the PD provided the participants with an action based methodology, experience in applying RA and transformation of the frames of reference which will assist them applying RA in their work role. My research suggested that RA PD that includes design thinking could be one possible solution to reducing the gap between the theory of RA (legality) and application of RA into practice.

7.1.2 Transformational learning

My research demonstrates that the transformation of a participant's frames of reference, which includes their point of view and habits of mind, assisted them to understand and apply RA. Adult learning assumes that adult learners bring to learning prior experiences and these experiences can be used in their own and others learning. The constructivist point of view is that these experiences can be built upon or can be limiting to a person's learning. Transformational learning uses critical reflection upon a person's experience as necessary for transformation to occur in the learner's point of view. The PD used framing and reframing as a transformational process to challenge and change participant's thinking that was limiting or created a barrier to understanding and applying RA. The design thinking model included framing and reframing as an enabler of discussion and reflection by the participants about the proposed problem and the result it would have on a person's life from a micro view (training environment) to a macro view (whole of life).

Brookfield's critical thinking

Brookfield's five stages of critical thinking and reflection includes a trigger, appraisal, exploration, alternate perspective and Integration that allows for learner development and transformation of their frames of reference, (Merriam et al., 2007). The PD included the Brookfield's five stages:

- **Trigger:** The problem and the Injury profile provided an uncomfortable and perplexing problem. The problem included placing the participant as the subject requiring RA to increase the relevance of the problem. The triggering that occurred when confronted with the problem was demonstrated in the participants comments, "if this was me I would not leave home" or "I would be so depressed."
- **Appraisal:** The use of the job profile and empathy map provided the participants with a process for appraisal of the problem and their own thinking. The following is a small selection of words from the group's empathy maps.

"Very venerable, resentment, cry, cry, cry, not very worth while, useless, worried about future, lots of pain, fear of losing my home, depressed, upset, regret, money loss, limited partner support, no confidence, big trouble can't do what I love, fear of losing my job, and money loss"

The process allowed participants to reflect as an individual (brooding & self examination) prior to working in a group to further examine the problem. By facilitating individual work the participants had an opportunity to explore and express what they were thinking or feeling prior to working in a group where they may have felt more self-conscious and less likely to voice those thoughts.

- **Exploration:** The problem themes and headlines process was a group activity that extended the appraisal stage and allowed for further exploration of the problem and the perceived barriers and issues identified by the participants. It was at this stage that group work became more difficult as participants challenged their own thinking and the thinking of other participants. The exploration of the problem and the thinking behind an individual's frames of reference became more evident and challenging at this stage. This created some group conflict and this conflict can be demonstrated in group one's individual participant responses to Q2.11. Group one's individual responses to "Did they learn from the group" included; Participant one completely disagreed, participant two and four had a neutral response and participant three completely agreed.
- **Alternative perspective:** The ideation and prototyping stages of the PD were able to provide the participants with an alternative perspective. Using the Clay Dyer video was a storytelling mechanism included as a trigger to encourage participants to question their thinking that was limiting or created barriers to the exploration of possible solutions or the development of prototypes. Group one and two produced fewer solutions and prototypes than group three. This could have been a result of the increased challenge that non-physical injuries and disability create in RA. This was identified in the literature as the difficulty people have in being able to understand and conceptualise hidden disabilities.
- **Integration:** Integration was demonstrated through participant's insights like "wouldn't stress be across all profiles". The positive responses to the PD by participants in the final questionnaire including:
 - Being able to see the student's perspective and as expressed by participant seven "opened my eyes"
 - The PD challenged beliefs and assumptions while providing skills and knowledge that could be applied and were of value to their role.

Individual Learning

Transformational learning focuses on the individual taking into account that not all learning is transformative. In this situation, learning is holistic and intuitive, and change is affected by cognitive ability. Transformational learning places importance upon dialogue as part of the process (Merriam et al., 2007). Storytelling can therefore assist in transformation. The participants used reflection and discussion during the design thinking process to transform their frames of reference.

It was observed that learning can occur even if there is no transformational change in the learner. The variation between participants' learning and transformation was observed during the research and recorded by the

participants in their responses to the final questionnaire. For example participant two, from group one, agreed that the PD enabled her to see the student's perspective but she did not feel that it challenged her beliefs or assumptions. The PD did not transform participant two's frame of reference about people with a disability, even though she reported that she learnt new skills and knowledge, and it was of value to her training role.

Group one reported that they did not learn from the group. The experience for participant two of being in group one and the PD meant that they gave a neutral rating for recommending the PD. Whereas the other three participants from the group all recommended the PD, which included participant one who gave completely disagreed rating for learning from the group. The goal of the PD was to transform participants negative or limiting thinking to enable them to build empathy for people with disability. If the PD did not challenge participant's beliefs and assumptions about people with disability then it is possible that the participant was further forward in their thinking, experience and empathy for people with disability. Therefore the participant did not require those frames of reference to be challenged.

Transformational learning focused on the socio-cultural takes into account the use of problem posing and the co-creative journey, multi-disciplinary approach, learning should include cultural, spiritual, micro and macro elements of the context, use empathy and metaphor. PD session's use of design thinking enabled:

- The use of a problem and the process of solving the problem as the focus for developing empathy, and skills and knowledge in RA
- Participants from different training areas were able to be involved, as it is not subject area specific.

The RA problem situated the participants thinking within a new context that allowed them to identify and potentially challenged their existing cultural and social norms. This included the way that they thought about their job and how they saw a person with disability if they had to consider the impact of their disability outside of the training environment. This was achieved by using design thinking's methods and tools. The job profile shifted the concept of how to conceptualise a job and the empathy map expanded thinking about the effects of a person's disability from the training environment (micro) to the whole of life level (macro).

- **The job profile:** Using the elements Do, Say, Think and Feel the participants were challenged to think about their job as more than a duty statement. Observation and discussion with the participants revealed that this was challenging as it shifted the way that they had to think about their job including the meaning of the headings. Participant seven identified in her

job profile that the element "feel" included tactile elements of pulse, wet and texture and the emotional elements of caring, empathy and kind.

- **The empathy map:** The same headings from the job profile Do, Say Think and Feel were included on the empathy map as well as context, people, pain, gain, obstacle and opportunities. Using the injury profile shifted the participants thinking about work and their capacity to work if they had sustained the injury and disability. Participant seven was able to express the emotional elements that she felt stressed, worried and regret as well as the physical and social barriers like not being able to drive, money loss, loss of independence, which would result in reliance on family.

The research findings and observations revealed that by including and using a context outside of the training environment gave participants greater awareness and increased empathy for the impact of injury and disability upon a person's life. The use of the employee story, injury profile and empathy map provided new frames of reference that enabled existing frames of reference to be checked and/or challenged. Participants reported that PD enabled them to see the student's point of view, this was also revealed in their empathy maps, insights and comments. This resulted in a change in the participants' perception and the definition of RA provided by the participants in questionnaire two. Participant eight defined RA as the ability to "Offer options, think of the outcome, be fair." Participant eight's understanding of reasonable adjustment after the PD highlights the realisation that students are people with a lives outside of the training environment.

7.1.3 Experiential learning

Adult learning and transformational learning place emphasis upon experience as a core competence of learning. Experiential learning is based on the Dewey's principles of continuity and interaction. Experiential learning should link current experience with past learning and relate that to possibilities within the future, and that interaction with the situation or context will influence learning.

My research findings reveal that by using design thinking, the PD provided the participants with experiential learning that enabled them to see the student's situation and perspective. This was supported by the willingness of the participants and the thinking that had been established in the framing phase of design thinking. The framing phase established the link between the theoretical "legality" element of RA and the "concrete" reality of the need for RA. The process of discovering, investigating and resolving an RA problem was essential part of the learning experience. My research observed the following propositions of experiential learning by Kolb and Kolb's (2005):

- **Learning is a process not an outcome:** My observations and discussion with the participants during the PD revealed that understanding the process was more important than creating a solution. The participants could see that the process would assist them in their work role and would be of benefit to them with current and future students. Being able to understand the process and the required learning was illustrated by participants' nine, ten and eleven comments that they needed "more time for explanation". These participants were all from group three, whose profile included the impact and issues associated with a mental health condition. The participants required time and assistance to conceptualise what support was needed and how support would be provided. The participants reported that the process could be transferred and used in the workplace and in their work role, in particular participant nine expressed "will help dissolve discrimination in the workplace."
- **Concrete experience & reflective observation:** The problem used the participants' current job role, prior knowledge and experience, which enabled the problem to remain relevant to the participant. Even though the scenario was hypothetical the injury profiles and the impact that it would have upon the participant would be real. This reality created conflicts and opportunities for reflection upon the participants' current thinking and frames of reference. This experience was essential in enabling the development of empathy and bridged the gap between theory and application. Participant ten's insights about the impact the injury and disability would have upon their life included their "children suffering" and having "issues at school", "loss of respect from staff and students", issues of "disclosure" of the disability and how would they do their "shopping." These insights go beyond the training environment and enabled participant ten to see the whole of life impact of the injury and disability.
- **Abstract thinking & active experimentation:** The groups demonstrated through the design thinking process the ability to use divergent and convergent thinking. The groups produced 731 entries for the job profile and the empathy map. These were then reduced to 57 headlines and themes, and then to 19 insights. These 19 insights were reduced to 14 problem statements. These statements were abstracted through ideation into 73 possible solutions, which were prototyped into 6 solutions. The solutions included three physical prototypes, 2 system prototypes and 1 app prototype. Group three developed a systems solution after their group had the insight that people's attitudes at work would be a major barrier. Their solution involved developing disability training for staff, a buddy system and emotional support for the person in the work environment as well as practical adaptations and adjustments. Group three's insight was enabled through the process of experiencing the impact of the disability upon their life. This realisation and experience further developed their empathy for the person, which increased their wanting to help. Participant

nine from this group felt so strongly about the learning experience that he or she believed that all staff should do the PD.

- **Thinking and feeling should be opposed with doing and reflecting:** Using the design thinking process enabled groups to use thinking and feeling opposed with doing and reflecting to discover the problem, discover insights and develop the solution to their RA scenario. Group three was able to think and feel what it would be like to be impacted by the injury and a mental health condition. Their thinking and new learning allowed them to see that resolving mental illness at the community level was a wicked problem. Their data revealed 207 entries for the job profile and the empathy map. The group produced 22 themes and 11 insights, however they did not produce any problem statements. This group's new view of mental illness added complexity to their context and problem making it hard for them to define problem statements. Instead they used their insights to experiment, discuss and reflect upon possible solutions. This process revealed that the impact of people's attitudes would be the greatest barrier and thus the final focus of their solution. Their final systems solution included making changes to procedures, process, job roles and providing training in the work environment as a way changing attitudes and providing emotional support to the employee.

7.1.4 Action learning

Transformational learning and experiential learning include action as learning. Action learning includes doing, active experimentation and the learner interacting with the context and environment as a part of the learning process. Action learning has similar elements to transformational learning and experiential learning, the use of discussion, doing and reflection as part of the learning process. Action learning includes real people resolving real problems, taking action in real time and using questioning and reflection throughout the process.

My research findings revealed that action learning supports the process of developing empathy for people with disability and understanding and applying RA. The participants demonstrated during the PD that action in linked practice to theory and created solutions and insights for the participants. Group two, whose injury profile included a physical disability, found the process of experimentation and prototyping revealed further insights about possible barriers and held assumptions. Through role-playing the person capacity it was revealed, that having the use of one hand would not limit the persons ability to use a cutting blade. The role-play (action) created learning that was part of the experience of the PD. The role-play also transformed the participants thinking and assumptions

about the person's disability and capacity. The following links the PD process to Marguardt and Waddill (2004) six components of action learning:

- **Problem or task focused:** The PD was based on a problem that could be or had been encountered by participants in their work role. The injury profiles were design to include and reflect the real impacts of disability on a person's life.
- **Individual and group learning:** The participants worked in small groups of four people. The participants reported that the skills and knowledge could be transferred and used in the workplace and in their work role
- **Reflection and questions:** The participants asked questions and were involved in discussion in the larger group and in their smaller groups. Participant's comments included reflecting on learning and application to practice.
- **Take Action:** The participants used the design thinking process, which is action based, to identify a problem, develop solutions to the problem using ideation, experimented with ideas using prototyping and developed a solution to a RA problem.
- **Included a coach:** The facilitator provided information, guidance and support during the PD session. Participants reported learning from the facilitator and being supported by the facilitator.

Marguardt and Waddill concluded that action learning creates a link between the different learning theories (Merriam et al., 2007). Taking action was fundamental to the transformational learning and experiential learning processes in the PD. All the participants reported that they were involved and contributed to the learning process.

7.2 Methods and tools

The research has provided evidence that design thinking can support learning as a PD process. This section presents and discusses findings that are relevant to sub-question three: What design thinking methods or tools can be used as part of the professional development training in reasonable adjustment? The findings were made from the observation by the facilitator, data and feedback provided by the participants during the PD session.

One of the significant comments from the participants was that PD sessions were not long enough. The participants commented that they required more time for understanding and clarification. Participants also reported that a follow up session would be of benefit. The PD followed the stages and steps outlined in Figure 7.2 made up of the framing, ideation, prototyping, implementation and reframing phases. The following discussion details the methods and tools used in the steps of each stage and how they support learning in the PD in RA.

PD Stage		Resources	Type
Introduction		Story of the injured employee	Individual
Framing	Step 1	Framing the context, Job Profile	Individual
	Step 2	The problem, Injury profile, Empathy Map	Individual
	Step 3	Insights (themes and headlines)	Individual
	Step 4	Problem statement, Butchers paper, large sticky notes, Injury Impact	Group
Ideation	Step 5	Video, Sticky notes, Accommodations handout	Group
Prototyping	Step 6	Paper, Masking tape, Cardboard, Scissors	Group
Implementation	Step 7	As above, 1 Member from another team	Group
Sell it	Step 8	Paper, Masking tape, Cardboard	Group
Reframing	Step 9	PowerPoint	Group

Figure 7.2: PD process

The Methods and tools that were used during the PD were selected and design for their ability to:

- Support the development of empathy
- Support learning and applying RA
- Support learning and using the design thinking process

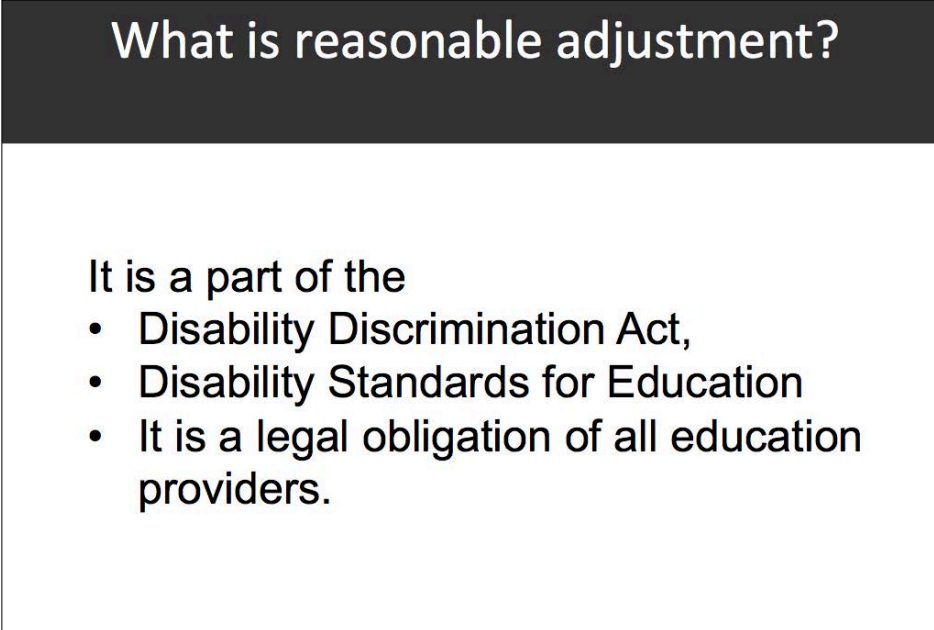
7.2.1 Design methods and tools that build empathy

Observations and data collected during the PD session revealed that the methods and tools used in the PD session helped to assist participants to build empathy. The tools and method worked together in a sequence to build willingness and openness, to create awareness, understanding and empathy, this allowed for new learning and then the application of RA. This section reflects on the ways some tools helped participants to build empathy.

It is important to note that it was the framing of the context to RA that enabled these methods to build empathy among the participant. The foundation of this was set during the Introduction where the participants were introduced to the openness of the PD and the legality of RA. The introduction section used an informal storytelling method to introduce the legal framework for RA, the injured employee story created a link between the legal and human reason for applying RA, and the quote, "we can't solve problems by using the same kind of thinking we used when we created them", triggered participants to reflect on their thinking.

The introduction creates the first step to building empathy through common experience, cognitive association and personal motivation.

The introduction was a simple explanation of the legal framework including a brief overview of the DDA, the DSE and stating that “It is a legal obligation of all education providers” to provide RA.



What is reasonable adjustment?

It is a part of the

- **Disability Discrimination Act,**
- **Disability Standards for Education**
- **It is a legal obligation of all education providers.**

Figure 7.3: What is reasonable adjustment slide from PD

Figure 7.3 is the only slide used in the PD to explain the legal requirement of RA. This approach successfully established the legal context without the argument or debate that had often been generated in previous PD sessions. The participants' reactions to this method were neither positive nor negative. However the concept was clearly understood as illustrated in participant twelve's final definition of RA as simply the word “legality.”

The building of empathy requires that the participant is willing, however the use of the legality and the quote created the initial thinking prior to the story of the injured employee. By outlining the legality, it removes assumed knowledge about why RA is a requirement in training. The use of the quote proposes a new way for the participant to consider problems and thinking. These steps allowed the PD sessions to set a fundamental understanding of RA, which created an environment and context for the following methods to assist participants to build empathy.

Story of the injured employee

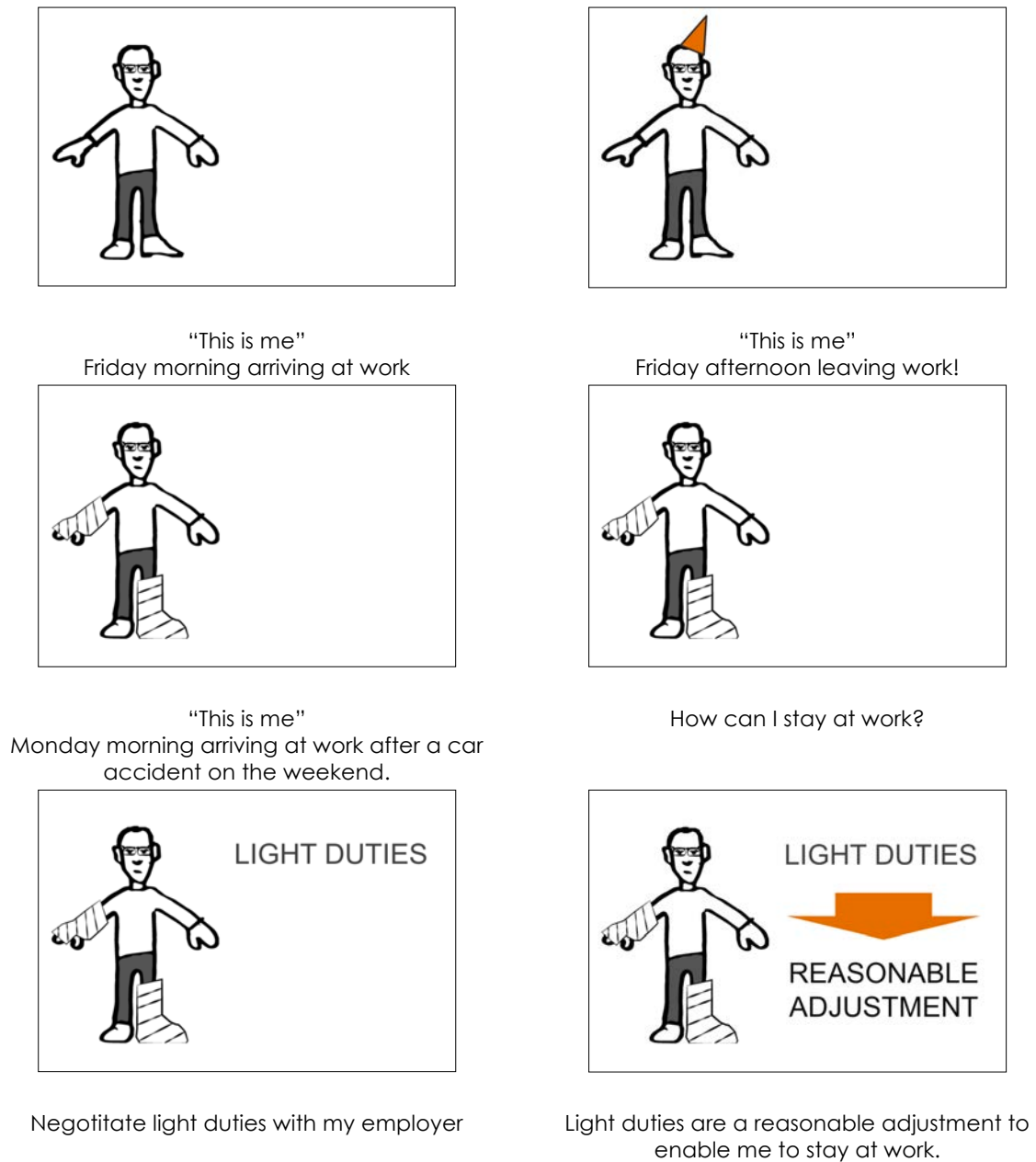


Figure 7.4: Slides from the story of my weekend injury.

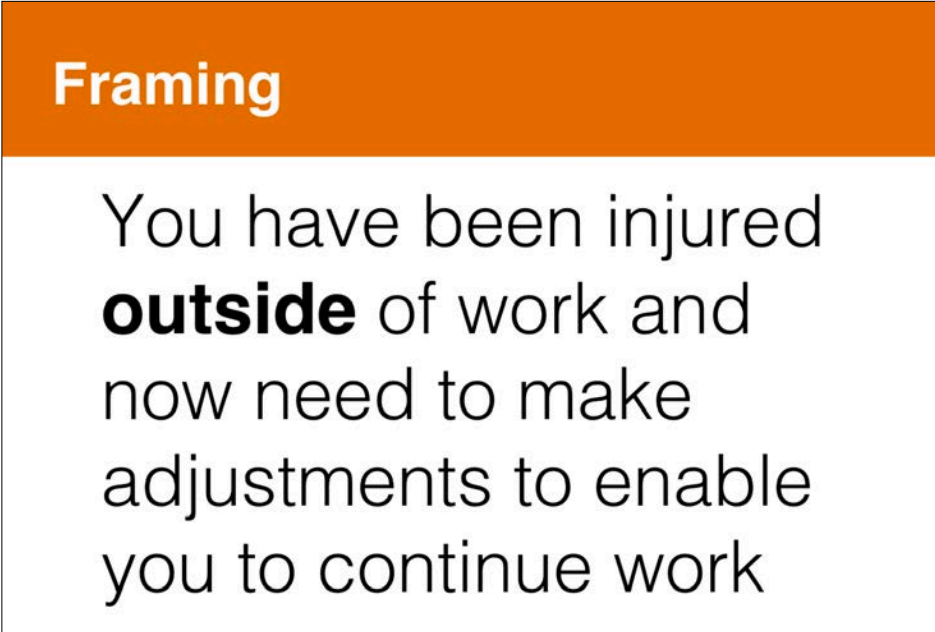
Figure 7.4 illustrates the story of the injured employee. The story created a link to the personal element of injury and that injury can occur to anyone at anytime. The participants were asked the question "how can I stay at work?" The group briefly discussed this providing comments like "change what you do", "modify your work space" and "reduce your duties". The discussions led the group to the concept and term "light duties." The facilitator then made the link to RA explaining that light duties are a form of reasonable adjustment because the person has become temporarily disabled by the injury.

The story established a light tone to start the discussion about the topic of RA. The use of group discussion engaged the participants, used their existing knowledge and supported the interactive nature of the PD. Participants were observed as relaxed, smiling and engaged during this method. There were side conversations amongst the participants during and after this section. They reflected on the story and their own positive or negative experience of the application of RA in the workplace. This was found to be an effective method to engage the participants in thinking about and discussing RA. This method had the ability to provoke a personal response and human connection to RA.

Framing

The framing phase was the most important and powerful phase of the PD. The framing phase introduced the context, the problem, built empathy and created insights. The methods and tools in this phase checked, challenged, opened up and established the participant's thinking and concept of RA. This allowed for new understanding, learning and the application of RA in the ideation and implementation phases.

The Problem Scenario



Framing

You have been injured
outside of work and
now need to make
adjustments to enable
you to continue work

Figure 7.5: What are we doing today? And Framing slides from the PD

The introduction of a perplexing and uncomfortable problem was essential as a trigger to engage thinking, discussion and reflection. Figure 7.5 shows the problem statement, which created some confusion and discussion amongst the participants. As suggested by Brookfield's five phases of critical thinking the

problem was designed deliberately to be perplexing and an uncomfortable problem as a “trigger” for transformational learning (Merriam et al., 2007). The confusion and the subsequent discussion was the intent of the problem statement. The two key points raised by the participants were “what has this got to do with students and training?” and “what is the importance of outside of work?” The injured “outside of work” concept meant that the employee did not have access to workers compensation. Therefore neither the workplace nor the employer could be blamed or held responsible for the injury. The question about the relevance to a student or training was not answered. This was also deliberate as the answer to that question would appear for the participant as an insight or would be revealed during the reframing phase.

Job profile

The job profile worked well to reframe the participants thinking about their job. The participants analysed their current job role using the concept of what they do, say, think and feel while working. The headings enabled the job to be considered from the participant's perspective, what they do, say, think or feel and from the perspective of others what they hear and see others do, say, think and feel. This shifted their thinking from the job being a set of task to the job being about interactions with other people. Participant seven under the heading feel produced 11 entries which included, emotive, behavioural, tactile, pulse, beat, texture, skin, wet, cold, compassionate, empathetic, caring, kind, understanding, guidance, open-minded and patience. Participant seven's list shows the concept of “feel” across a range of elements in her job the way she feels, the way she uses tactile feeling in her job, working with patients, working with students and being open-minded and patient as a feeling.

Injury Profile

This was an emotionally powerful tool as it created a trigger for thinking and an emotional response from participants. The injury profile “shocked” participants into considering the reality of the consequences that an injury and disability can have on a person's life. Comments like “if this was me I would not leave the home” and “I don't think I would want to live” were the reactions that were anticipated. The injury profile is an example of a persona that makes a cognitive and emotional connection with the participant, to further develop insight and empathy for people with a disability.

Empathy Map

This was an excellent tool to make the connection between the job profile and the injury profile. The empathy map allowed participants to reflect on the injury and take a step back from their first reaction to the injury profile. The connections

that were made included understanding how the person would feel and behave, and how the injury and disability would impact the person's capacity to do their job. Participants seven recorded on her empathy map:

- **Feel:** Depressed, tired, stressed, worried, moody, stressed, emotional, annoyed
- **Fear:** Pain, regret, no confidence, chapter change

Participant seven's data illustrates the connection that she had with the injury profile and the personal impact of the injury. The inclusion of stressed twice in the feel section further empathised the reality of the impact on the person. This successfully highlighted to the participants that the person's disability is permanent and is present in all parts of their life. It required the participants to think from a new perspective. Even if a participants beliefs and assumptions about people with disability were not challenged this process engaged them in new thinking and learning. As indicated by participant eleven who rated mostly disagree to the questions that the PD challenged beliefs and assumptions but rated learning new skills and knowledge during the PD as completely agree.

Storytelling

This was very powerful because the method;

- Set participants up with a question that would seem to be impossible to answer or solve.
- Gave participants experience and exposure to a situation and person with a significant disability in a real, empowering and challenging story.

'How could you go fishing without any hands, no left arm, half of your right arm and no legs, without the assistance of another person or technology?'

The initial reaction from the group was "you cannot." The participants were given the answer to the question using Clay Dyer's video. However the video was successful because it was a story that showed Clay Dyers life growing up, his significant physical disability and included interviews with his parents. There were comments and reactions from participants of sadness and amazement. The story is captivating and challenging providing the participants with an example of true human ingenuity, perseverance and love. The story reinforced the positive and negative impact of disability on the individual and their family. This method helped to highlight to the participants the significance of being aware of their thinking and assumptions, and it created a shift in thinking.

7.2.2 Assessment and considerations

While many design methods helped participants to build empathy towards students with a disability, parts of the PD presented spaces for refinement. Figure 7.6 summarises the methods and tools and changes required if the PD session was to be run again. One of the most significant changes would be an increase in time. The whole process would need to increase from a half-day workshop to a full day workshop.

Stage	Method or tool	Changes
Introduction	PowerPoint	Worked successfully
	Story of injured employee	Worked successfully
Step 1 - Framing	Framing the context	Worked successfully
	Job Profile	Worked successfully
Step 2 - Framing	Injury profile	Worked successfully – however could be expanded with use of video or photographs
	Empathy Map	Needs some modification – Removing of the context sections, relabeling of the quadrants to be clearer for participants to complete.
Step 3 - framing	Insights (themes and headlines)	Needs modification – This should be made a group facilitated activity on the wall or large piece of paper. The concept and process is okay, it would work better with novice users who required support. Using matrix or group clusters would work.
Step 4 - Framing	Problem statement, Butchers paper, large sticky notes,	Needs modification – This should be made a group facilitated activity on the wall or large pieces of paper. The concept and process is okay, working with novice users requiring support. Using matrix or group clusters would work.
	Injury Impact	Prior to the ideation phases checking problem statements with the injury impact exercise would identify areas that the disability was not a barrier to job performance
Step 5 - Ideation	Video, Sticky notes, Accommodations handout	Needs some modification – using wall space for brainstorming on to sticky notes would help to facilitate the process
Step 6 – Prototyping	Paper, Masking tape, Cardboard, Scissors	Needs some modification – more time required, needs to be facilitated
Step 7 – Implementation	Paper, Masking tape, Cardboard, 1 Member from another team, implementation matrix	Major issue was time
Step 8 - Sell it	Paper, Masking tape, Cardboard	Major issue was time
Step 9 - Reframing	PowerPoint	Major issue was time

Figure 7.6: PD process changes required

Other consideration that could help to build empathy in the PD are:

Timeframe: Time was under estimated and would need to be increased considerably. The participant comments at the end of the PD verbal and written indicated that a full day would be preferred with the option for a follow up session at a later date. Participants commented that the follow up session would occur once they had had time try RA in practice in the training environment. They expressed the pace of the PD was good however more time would have allowed for clarification and refinement of the process. Additional time would have allowed the facilitator to add further details and explanations. The handouts worked well and enabled the participants to work individually and as a group. There were comments that there was a lot of information provided and that more time would have allowed for greater use of that information. The facilitator supports the participants' comments concluding that the PD felt rushed and there was not enough time for explanation, discussion and reflection.

- **Physical Environment:** The physical environment did impact on some of the steps in the process. Room setup is an important consideration in the process of design thinking. The room was too small for 12 participants. The room had limited wall space, the desks were small and participants were hesitant to stand or move around. In future PD sessions the room and set up should include a room with at least 2 large walls that can be used for brainstorming, a single table per group, chairs should be provided however standing and movement should be encouraged. Activities that require groups to use walls for group activities would increase standing and movement.
- **Clarity:** The participants were uncomfortable with ambiguity and needed the process to be fully supported and facilitated. However proposing a problem that was focused on the participant and their work duties made it easier for participants to commence the process and to use their own knowledge and skills. The use of the individual brain writing activities in the beginning steps assisted in facilitating the process and allowed for individual work prior to group work. To increase learning and interactivity the groups could rotate to different injury profiles after the job impact and ideation process have been completed. This would allow for different perspectives and exposure to other disabilities. It would also identify common barriers that were present across the different disabilities types.

7.3 Learning, thinking and empathy

The PD session was able to increase participants' empathy for people with disability. The feedback from participants in the questionnaires, their behaviour during the PD session, the results of the PD session and their verbal feedback after

the session validated the success of the PD session in building empathy. The design of the PD session and choice of design thinking tools contributed to this outcome. Importantly the selection and design of the tools in the framing phase was deliberate and designed to challenge frames of reference, provide insights, create divergent thinking, and evoke discussion and reflection.

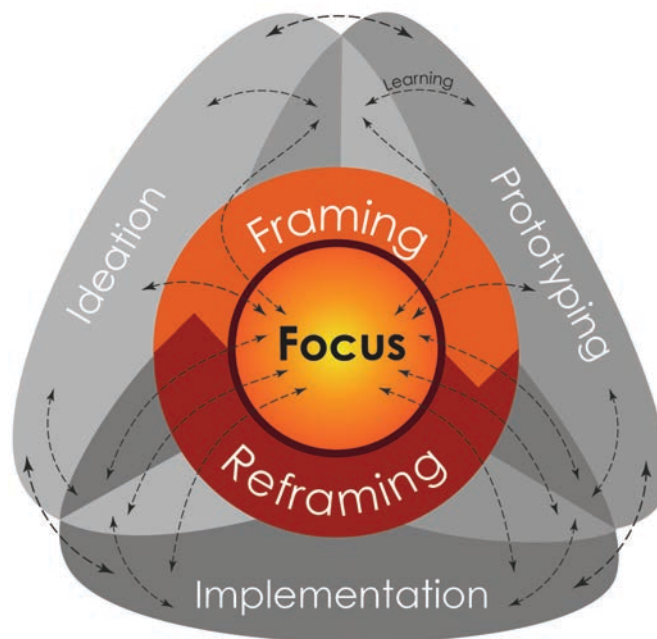


Figure 7.7: The design thinking model focus core

Figure 7.7 illustrates that the key element is the focus which is circled by the framing and reframing phases. The focus is on the human need that exists within the context, problem and solution. The arrows in Figure 7.7 show how learning moves to and from each phase and the focus. The framing and reframing phases are used to

- Identify, understand and possibly challenge existing thinking
- Understand, identify or illustrate the human need within the context and the problem.
- Use transformational, action and experiential learning to develop empathy.

This process is designed to allow people to be conscious of their own thinking in particular their frames of reference. The model embodies the constructivist principle that people construct their own individualised version of reality. Therefore people will see, hear, feel and think what they want based on their goals, frames of reference and constructed reality.

Figure 7.7 illustrates that the focus and the framing and reframing phases overlap the ideation, prototyping and implementation phases. This overlap ensures that at each stage the participants are framing and reframing their thinking to align with the focus. Learning links each phase so that learning from one phase can be transfer to another phases. This recognises that as participants learn they can use that learning to change their frames of reference while build new knowledge and skills within and across phases. The development of empathy was achieved through the use of tools that keep the focus upon understanding, identifying or illustrating the human need within the context and the problem.

Transformational learning is about changing the way a person thinks through to being able to see situations and the world differently. This means that a person needs to learn to think differently but before they can do, they need to learn to see and be aware of their thinking. Therefore, a person who cannot identify what they think, will not know what they need to change. This is their habits of mind and point of view, which can be seen when people react instantly or responsively. Such as the comment from group two "if you only have one hand you can't sew" demonstrates. These types of comments by the individuals are based on thinking about the injury or disability using their existing frames of reference. The development of new insights and experiences combined with reflection shifted this response to "you can't" to "how can you." This shift demonstrates a change in thinking that enables solutions to participation to be investigated rather than barriers created or reinforced.

The research identified that decision-making was influenced by the person's goals. This would mean that any process designed to build empathy would be affected by the person's decision-making process and goal orientation. Therefore if a participant perceived the person as a label, for example student, then their decision-making would be based upon that label and the required outcome. However, if the label is changed from student to person who has a job, home and is also a student then the image and way of thinking about that person will change. This type of thinking is most evident when assumptions are made about a student and their abilities, behaviours and attitude. A comment like a "student cannot read & write & will not try" does not suggest understanding or empathy. What could be perceived as "will not try" could be a related to a number of other complex and relevant reasons. The following are participants' comments from the empathy map section fears, pains and loss.

"Very venerable, resentment, cry, cry, cry, not very worth while, useless, worried about future, lots of pain, fear of losing my home, depressed, upset, regret, money loss, limited partner support, no confidence, big trouble can't do what I love, fear of losing my job, money loss, fear everything falling apart, not very worth while, very fearful, fear of losing house, partner, income, independence, scared of losing job, people

thinking weak or stupid, not being able to get job back, losing house, losing husband, losing kids, people judging, feeling unstable, not getting, losing respect, help of colleagues, aggressive, cant communicate with students or staff, not able to work with large groups, unable to maintain professionalism, anxiety, defensive communication, fear of counselling, fear of oneself, discrimination, cannot do physical parts of job, oversleeping, not having normal standards organised and planning, loss of independence, get nervous talking to people because I talk to slow, struggle to maintain good relationships, difficulty concentrating during work, struggling to remember what was being discussed, cant travel to clients because I get tired, difficult getting to work, can't walk fast, struggling to write notes, difficulty calculating, family interfering, angry, medication and rehabilitation, loss of job, can't do hand skills, cant keep track of job, people talk about me, checking up on me, look after pets, find a partner, extreme moods, fear, frustrated, loss of control, feel sad, feel annoyed, yell at family, try to talk to manager for support, angry, depressed, pissed off, confused, and everyone feels sorry for me and is interfering."

These comments demonstrate thinking about and seeing beyond a label of student and demonstrate a deeper understanding of the person's situation. With this type of understanding the participants would be more empathetic towards the student and be able to understand and think about the students abilities, behaviour and attitude in a different way. The principle of RA is for the trainer to work with the student and their supports. This is not to make the process more difficult. Rather this interaction with the student provides and opportunity to develop an understanding about the person outside of the role of student. This interaction will allow for greater empathy, insight and help to identifying ways of assisting and supporting the person using RA and existing supports. The goal of the trainer moves from what the student has to do, to what can we do to make it possible for the student to achieve the training outcome.

7.3.1 Empathy and RA

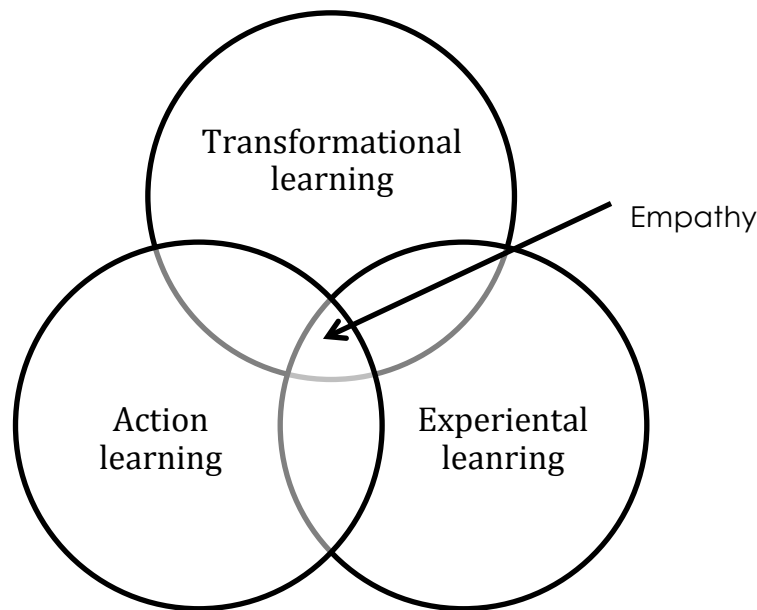


Figure 7.8 Learning theory and development of Empathy

My research identified that to be able to understand and implement RA it is essential that those involved have the necessary empathy for and attitude about people with disability. Findings from the PD session revealed that design thinking can support transformational, experiential and action learning. Figure 7.8 illustrates my concept of how the three types of learning work in collaboration to develop empathy in participants during the PD. Methods and tools were selected to stimulate thinking, reflection, action and experience. Marino (2013) discussed the development of empathy using a cognitive understanding (thinking) and an affective sharing (feeling) approach. The main triggers for empathy are motivation and willingness to care for another person combined with frames of reference, experience and goals that are similar to the other person.

7.3.2 Design thinking adds depth

The added dimension that design thinking provided to the PD did create some impact on the participants when they perceived a step or process to be difficult, unclear, restrictive or challenging. When this occurred it changed the individual's behaviour, which affected the group's dynamics and changed the learning environment for other individuals and the whole group. The data from the research revealed that there was some conflict within group one and this was because of different levels of understanding of the concept of RA by the individuals within that group. The research also identified that the presentation of a tool can cause distraction and or confusion for the participants if it is seen to be

unclear or overly prescriptive. This resulted in the participants becoming bogged down in understanding the process or tool or navigating group dynamics rather than focusing on the design challenge. The empathy map caused some confusion. In particular several participants asked if they had to fill in their answer in the section provided. Therefore it was important that the facilitator was aware and assisted participants to navigate and understand the design thinking process. The facilitation of design thinking required the facilitator to spend time working with groups and individuals to ensure that they kept moving forward and assist to resolve any concerns or conflicts.

The design of the PD session used the previous experience of the researcher in providing PD in RA to VET trainers. The most significant barrier encountered in the past was the participants' attitude towards the PD and their willingness to engage in the process. Therefore the design of the PD addressed this by focusing the attention on the participant. During the PD session the participants learnt about RA by having to solve the RA problem of assisting an injured employee to return to work. The participant was the person in the problem who had been injured and as a result of the injury acquired a disability. This allowed the participants to use their existing knowledge about their role, work environment and own context to understand the impact that the disability would have on their capacity to return to work. The problem was designed this way because:

- The participants were all trainers and who needed to be able to demonstrate the skills or knowledge required by the students that they train.
- This allowed the skills, knowledge and insights about RA adaptations made for participant to be reframed into the context of and for a student.
- The use of existing skills and knowledge reduced the learning load and created a problem that was relevant to the participant.
- It used the concept of walking in another person shoes to build empathy.

Reading and interpreting the injury profile by the participants revealed, openly in some cases, the challenges it raised about participant's existing knowledge and frames of reference. This was most evident in participant comments like "if this was me I would not leave the home", "I be so depressed" and "I don't think I would want to live". These comments reveal the initial understanding of the disability as being an overly negative life-changing event. This is a common bias and assumption about disability that it is associated with loss, inability and devaluing of the person and their capacity. Therefore the facilitator's role was to guide the participants to challenge this concept by changing their frames of reference through understanding and applying RA to allow the participants to see the difference between perceived and real barriers. This means that when design thinking is used as a PD method it is essential that there is facilitator who has knowledge of the design thinking process and there is a person who has knowledge in the subject area, in this case RA and disability. This is important, as

the facilitator does not usually require specific subject knowledge, only knowledge of the design thinking process, when it is used as a problem solving process.

The process of a participant learning about and challenging their frames of reference is complex and requires management. The participants' reactions to RA and the challenges it creates for the participants was less disruptive in the PD session using design thinking than previous PD sessions run by the facilitator that did not use design thinking. The use of design thinking allowed a problem to be constructed that placed the focus upon the participant as the person with a disability not a fictitious third person. Therefore the reaction to learning about and applying RA was not 'why should I do it for them' rather 'this is of a benefit to me'. The insight of one participant after challenging their frames of reference about what a person with a physical disability can or cannot do allowed others in the group to shift their perspective. This learning from the group and peers gave the participants ownership and allowed them to construct their own knowledge. The challenging of frames of reference also raised other issues for individuals that may not have been directly related to the PD. There was some background discussion amongst the groups during the PD session about events, incidents or experiences that they had found challenging or were still trying to resolve with their work or life. These discussions included personal experiences or biases that had an emotional element and were held strongly and would not be appropriately resolved within the PD session. The facilitator's role was essential in monitoring and managing the conflicts, reactions and assisting in resolving or acknowledging and moving on when differences in frames of references cannot be resolved. The facilitator focused on creating a supportive and safe environment and provided when required appropriate support and coaching to participants.

The challenges faced by participants during the PD session also impacted the facilitator. It was essential that the facilitator was:

- Open to being challenged
- Not overly invested in needing to change participants frames of reference
- Acknowledged and detached from any emotional attachment to the process or the problem
- Able to be adaptive and flexible.

The participants in the research had not been involved in design thinking previously and this meant that they required extra time and input from the facilitator during the process. This subsequently impacted upon the amount of time available for some of the phases to run completely. Therefore based upon the progress of the groups and the learning that had been evidenced during the PD session the facilitator changed the allocated time phases and activities. The role of the facilitator was to provide information, support, facilitate the process

and provide input and feedback when appropriate. It was important that the facilitator understood that he was not responsible for the participant's attitude, learning or changing their frames of reference.

The research indicates that design thinking was successful in providing PD in RA for VET trainers. The insights demonstrated by the participants throughout the PD re-enforced the success of design thinking as a method and tool for PD in RA. The participants had insights like:

- “wouldn't stress be across all profiles” showed that the participants were contextualising barriers that were common elements to all disability types.
- “one hand wouldn't limit the use of the cutting tool’ showed that assumptions that had been made earlier about a physical disability limiting the student's capacity, with closer examination revealed the assumption to be false.
- “relationships and support of co-workers would be key to helping in role redesign” shows the realisation that cooperation and attitude are fundamental to all reasonable adjustments.

The final reframing phase answered the question “what has this got to do with students and training?” The participants were all trainers and as such they need to be able to demonstrate the skills, knowledge and competency in their training subject area. Therefore if they can make adaption an RA for themselves to be able to perform their job duties then they would be able to do the same for a student with a disability. Secondly the process highlights that not all elements of a job are essential and there is flexibility with what duties are inherent and what are assumed. This lends relevance to the design of training programs and the use of natural supports within the workplace. But most importantly the agreement from all participants was that RA is possible. Overall the participants reported that the session was enjoyable, relevant and the skills and knowledge attained could be applied to their work role. The comment by one participant to Q2.17 that they “could do with a follow up session shortly after this one” and similar verbal comments at the end of the session supports the idea of a follow up session or support after the PD for participants. This indicated that the participants saw value in applying the new skills and knowledge in the workplace prior to a follow up session.

7.4 Reflections and alterations

Design thinking as a PD method is not a magic solution to solve the problem of providing training in difficult or contentious subject matter. Rather the research validates that it can be used as a learning method, however like other

instructional methods it requires planning and delivery management. The research identified that the successful use of the design thinking process is dependent upon the willingness of the participants to be involved and the experience and skill of the facilitator.

The methods and tools used in the process.

The methods and tools used in the PD were successful in providing participants with increased empathy and RA skills and knowledge. The methods and tools used in the PD could be further refined for future use. The greatest impact was time. However small changes could assist in making the process run more smoothly.

Group work

When the participants worked in groups there was a tendency to use discussion, negotiation and consensus before ideas were written down or actions were taken. This supported the process of discussion and reflection however it limited the diversity and risk taking of the group especially when generating ideas. The use of group work should be further facilitated making sure that participants place importance on writing or drawing ideas down prior to discussion.

Use of stories

The use of stories was highly successful and this should be further extended to give examples for all injury profiles. The use of video could be used to provide framing of thinking and understanding the use of methods or tools.

Empathy map

The empathy map raised some questions. The participants could see the link between the job profile and the empathy map. The main area of confusion was the sectioning of the empathy map (see Figure 7.9). The sections created confusion as participants thought that they were required to respond within that section for each of the quadrants. This confusion could have occurred because there was a perceived wrong or right way of completing the empathy map. The empathy map was designed as discussed by Jackson & Buining (2010) as a mind-storming and divergent thinking tool. The sectioning of the empathy map into external, internal and context was to facilitate divergent thinking and to use the concept of the multiple levels of a complexity as discussed by Pastor (2009) as design channels. The sectioning of the empathy map designed to prompt thinking about the varying impacts that disability has in different contexts, on people or

environments. However, the sectioning initially had the opposite effect, convergent thinking, the focus went from the thinking about the individual to how to complete the form.

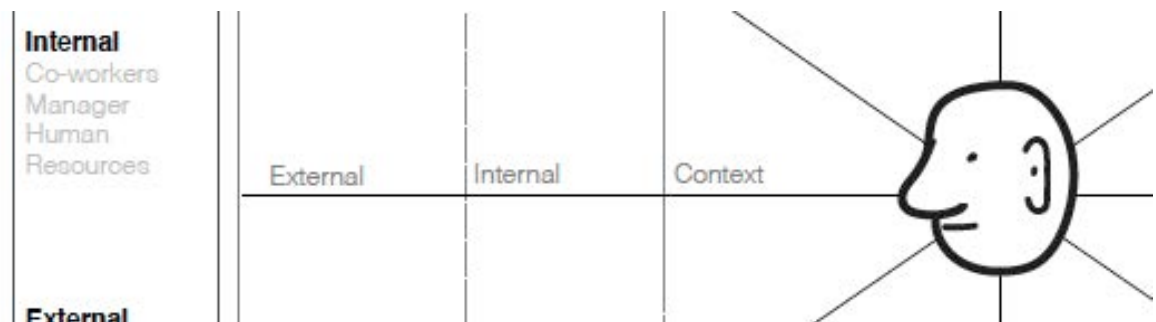


Figure 7.9: Empathy map context sections

An alternative to sectioning the empathy map could have been for the facilitator to propose the idea of contexts using the design channels model during the empathy mapping process. This would mean that the map could be simplified and the contexts could be proposed verbally with a supporting graphic by the facilitator to assist participants. Further to this before attempting the empathy map the groups could mind-storm ideas about context, people and environments that they interact with in their everyday life. This could then be completed after they have read the injury profile to see how or what would change. This would assist in developing understanding about the similarities, differences and changes that occur in the everyday lives of a person with and without a disability.

Insights, themes and headlines

This method should become a group facilitated activity on a wall or large piece of paper. If all data from all participants was used it would have provided more data for themes to draw out similarities and insights. This could be used in conjunction with a matrix or group clusters to further understand the data.

Injury impact

Prior to the ideation phases checking problem statements with the injury impact exercise would identify when the disability was not a barrier to job performance. This would allow groups to choose problems to ideate more efficiently and effectively.

Ideation Phase

Modifications to room setup would help to facilitate ideation. If this is run as a facilitated activity it could work as a large group exercise. As a small group

exercise the use of walls and sticky notes would allow participants to move around and place ideas on the wall with less conversation.

Prototyping Phase

Prototyping required more time and needed to be facilitated. More time would have allowed for more time for building, testing and feedback about prototypes. Facilitating this phase would have given the participants more structure and guidance, as they were all new to design thinking and the prototyping process.

Implementation Phase

Implementation was impacted by time restrictions. Future use would require more time to identify the viability of the prototype and develop a plan for implementation. The implementation would have the potential to identify further barriers not previously considered by the participants. These barriers would include process and procedural barriers that may exist within an organisation when trying to implement RA. This is an essential process as it provides an opportunity to address barriers that relate to RA that included attitude of staff in non-training roles within RTOs.

Sell it

The sell it method was impacted by time restrictions. Future use would require more time for participants to prepare and present their ideas and learning. Allocating appropriate time would allow for group discussion and reflection on learning after each presentation and at the end of all presentations.

Reframing

The reframing phase was impacted by time restrictions. Future use would require more time for discussion and reflect on learning, empathy and thinking. This would then enable reframing learning into the training context. The reframing process could also be extended as a follow-up session to assist with further skills development.

The data collected and reflection on the delivery of the PD session by the facilitator identified that the delivery of future PD sessions would need to consider:

- Participants with no design background need a lot of support during the process
- That more than 12 novice participants would require more than one facilitator

- That the facilitator would require RA knowledge
- Providing the workbook prior to the PD session could decrease time and learning
- The length of the PD needs to be at least a day or a series of workshops
- The inclusion of a follow up workshop or support for participants after the PD
- The setup and size room, having minimal furniture and have plenty of wall space
- The removal of desks could encourage use of walls
- The possibility of having prepared work tables for prototyping
- Use of two rooms one for steps 1-4 and then a different room for steps 5-9
- The use of more videos to provide empathy and disability information
- Possibly of having one injury profile for all groups or rotating groups to different injury profiles
- Using all group data for development of insights and problem statements

Summary

The design thinking process supports the concepts of learning which is important if it is to be used as a PD tool. Design thinking adds a new dimension to learning that has the ability to challenge and change thinking through the use of problem solving. The research findings indicate that design thinking was able to support learning, in particular adult learning principles. PD was more enjoyable and allowed participants to be involved and contribute to the learning experience. Being involved and contributing to the learning process allows the learner some autonomy and control in their learning (Knowles et al., 2005). The participants agreed that the PD allowed them to learn from others and their experiences. The use of discussion and reflection in the methods and tools supported action, transformational and experiential learning (Zuber-Skerritt, 2001; Merriam et al., 2007). The PD facilitated empathy and insight into the needs of people with disability through the choice of tools and methods, and the integration of learning theories. Importantly the participants gained new skills and knowledge that were of value in their role and could be used in the training environment. This value was demonstrated in the participant's recommendation of the PD and requesting a follow-up session.

Chapter Eight: Conclusion

8.0 Introduction

This research has demonstrated that design thinking (DT) could be used as a professional development (PD) methodology for vocational education and training (VET) trainers in understanding and applying reasonable adjustment (RA), while having further benefits of raising the trainer's empathy and understanding of the impact of injury and disability upon a person's life and the significance of RA outside of the training context.

This research has developed a PD framework for the delivery of PD in RA. The PD framework includes a design thinking model developed for this study (Figure 8.1) and selected methods and tools that support the model. This PD framework answers the question: How can design thinking be used as professional development training for VET trainers in the area of reasonable adjustment? This question was directed at the research problems;

1. Understanding the link between a problem's complexity and wicked problems, the theoretical underpinnings of wicked problems and the methodologies used to address wicked problems.
2. The integration and support of learning theory within design thinking to support adult learning, facilitate the development of empathy and the understanding and application of RA.

As design research, the design thinking model was based on the incorporation of knowledge from wicked problems, design, design thinking, and learning theories, while integrating with constructivist theory. The design thinking model, methods and tools used and the structure of the PD session supported the development of empathy. This research concluded that the development of empathy and having empathy for a person with a disability assists and enhances a trainer's ability to understand and apply RA.

A workshop (PD session) was designed and conducted to explore the relevance and success of the PD framework and the use of design thinking in developing an understanding and application of RA. The workshop consisted of 12 participants who worked in three small groups. The structure of the PD, the methods and the tools used supported the development of empathy, which facilitated new learning in RA through action and experience, and assisted in the transformation of frames of reference. The PD structure built confidence by utilising the existing skills and knowledge of the participants and the use of phases that progressed from individual work to group work. The first person RA problem of the PD assisted in creating motivation for learning as it provided expectancy, instrumentality and

valence. The outcomes of the workshop identified the relationship between the participant's willingness to participate and the development of new ways of thinking, new ways of thinking and the development of empathy, empathy and acquiring new learning, new learning and an ability to understand and apply RA. In summary the use of design thinking in PD enhanced the development of empathy and facilitated learning in RA.

8.1 Design thinking and learning: Findings from the research and the workshop.

It was suggested in Chapter Four that design thinking had the potential to support learning. Adult learning theory, action learning, experiential learning and transformational learning were investigated, deemed to be relevant and integrated into the design thinking model. The findings from the PD identified that the model;

1. Facilitated learning: Skills and knowledge, learning from others and contribution to their own learning (Adult learning)
2. Action and experience facilitate learning: The tools and method used enabled the experience of solving a RA problem using theory and experimentation. (action and experiential learning)
3. Facilitated empathy: Challenged beliefs and Assumptions, enabled seeing the student's perspective. (Transformational learning)

8.2 Relationship between design thinking and learning

The design thinking model proposed in Chapter 5 (Figure 5.6) suggested that being able to frame and reframe thinking around the focus of the design problem would assist to increase trainer's empathy and learning in RA. Based on this model the selected methods and tools were chosen because of the possibility they would increase willingness and openness, and develop empathy while supporting action, experiential and transformational learning

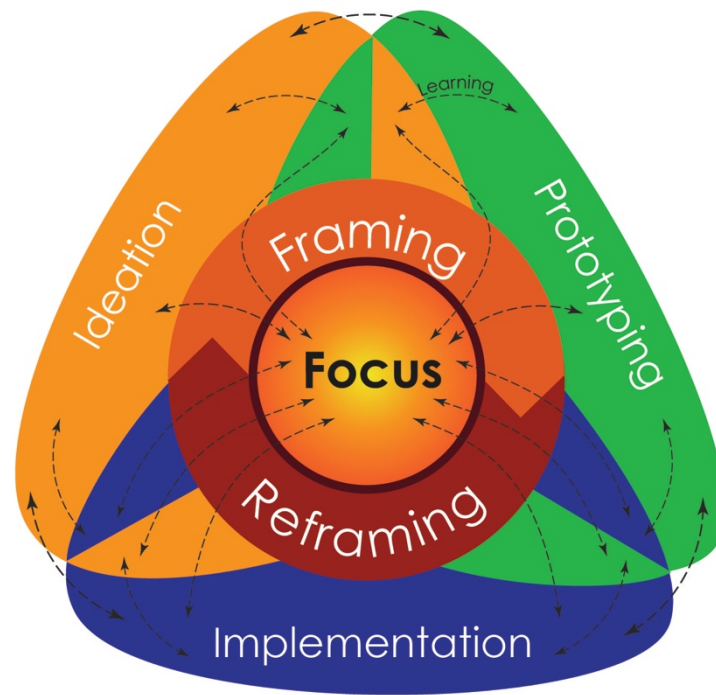


Figure 8.1: Framing / Reframing Model of design thinking

- The use of framing and reframing to increase empathy and to challenge thinking. The suggestion is that design thinking is an empathy focused approach this model was developed to increase the likelihood that empathy would be considered and seen as relevant as it challenges framing and reframing of a problem around the human element (focus) of the problem and context.
- The cyclic nature of design thinking as a consideration of the design of the model. This includes the recognition that the phases do not exist in isolation rather there is an overlap and use of methods, tools and thinking within and across phases.
- The recognition of learning within in design thinking and the significance of the process over the outcome. The process of learning in particular the development of empathy in itself could be the outcome of design thinking rather than the development of a usable solution.
- The nature of problems and the increased complexity of the world. The model takes into account that problems are becoming more complex and in some cases are wicked problems. To facilitate the development of solutions to wicked problems consideration should be given to the role of those involved in the design thinking process and the need to widen their view of the problems context and what is perceived to be the problem. This includes being able to recognise, challenge and change their own frames of reference prior to attempting to develop solutions to problems.

In summary, the frames of reference and actions of those individuals engaged in solving wicked problems will heavily influence the identification of the problem, the proposed solutions and implementation of those solutions. Therefore design thinking should not be considered a process for solving the problem, but it should be valued as a process that creates new learning and frames of reference for those involved in the process. Design thinking could be considered a powerful process that assists to “design the thinking” that is needed to solve problems. Therefore design thinking is a human centred approach that has the ability to create new thinking that will enable the discovery and resolving of problems.

8.3 Future research and development

Firstly, the research investigated the context and extent of problems faced by VET trainers and students with disability in VET in particular the application of reasonable adjustments. Secondly, the research investigated learning theory to identify if there were elements of the design thinking process that could support learning. Thirdly, the research investigated the background, current literature and theories that existed within the area of design thinking for the practitioner to extend and develop his knowledge in design thinking. Fourthly, the research investigated examples of design thinking being applied within the educational context in the redevelopment of curriculum or delivery. Finally, the investigation of the process of decision-making in particular abductive thinking and the building of empathy as these were identified as key strengths of design thinking. The research did not aim to contribute to the literature in VET and CBT, educational theory, decision-making or empathy theory.

There was evidence in the literature of design thinking being used as a learning tool and to innovation in the learning processes. The literature further supported learning theory being overlayed with design thinking. This was supported by the research data with 100% positive responses to the PD session developing valued and usable skills and knowledge in RA. Furthermore 92% of participants' reported an increase in confidence levels in applying RA and 92% of participants would recommend the PD to other trainers. The PD was designed to increase the VET trainers ability to see the student's point of view. This was supported by a 100% positive response from research participants that the PD enabled them to see the student's point of view. Future avenues of research could include investigation into the further alignment and refinement of learning theories with design thinking process, tools and methods.

The secondary goal of the research was to design a PD method that could be easily replicated by other facilitators. This meant the investigation of methods or tools that could be used by facilitators of RA PD. A number of limitations placed on the research , such as, restricting the participant group to only VET trainers

meant that the method could be used with small and large RTOs as it does not require additional personnel. However this restriction means that the facilitator must have experience with people with disability and applying reasonable adjustment within the VET training environment.

The most important selection of methods or tools was those that developed empathy for the student with a disability. Firstly the literature advocated for the use of affective and cognitive processes to enable the building of empathy. Secondary to this the literature eluded to the importance of understanding and recognising that an individual's goals would influence their decision making process. Therefore the design thinking tools that supported the empathy building process where the problem scenario was personalised to the participants work role, the injury profile a modified persona, the modified empathy map, the use of video as a story mechanism and the reframing phase of the design thinking process. Future research could include an investigation of the design and use of video as an empathy building and reframing mechanism.

The process of facilitating design thinking should not be taken lightly. It is a process that requires skills and it could be the failure of facilitation that leads to the failure of the PD process. Therefore it would be proposed that a future avenue of research would be to investigate the design thinking facilitation process by non-designers of this PD. Secondly, the process of facilitating design thinking for novices requires extra time, support and training for participants. In particular novice practitioners will feel uncomfortable in ambiguity and want to move quickly to the problem solving process without clearly defining the context or the problem. Future avenues of research could investigate steps 3 Insights and 4 problem statements in the design thinking process as these were identified as the least successful steps.

The literature proposed that designers should no longer ignore the increased complexity of the problems faced by society on a local and global scale. This meant that a designer would need to be able to extend their skills beyond those of the traditional design realms. The advent of wicked problems and the conclusion that design thinking could be one of the methods for generating solutions to these problems could place designers in a new role within society and industry. This proposed new role is supported by the researchers own practice and agreement that design thinking is a unique attribute that designers should try to enhance and develop in their practice. There is literature that argues that it takes time, skills, knowledge and practice to hone and develop design thinking. Designers should not be afraid to embrace this new challenge and opportunity in their practice. Further research could include an investigation of how designers and trainers could collaborate in the design, development and application of RA.

Finally as a researcher, designer and a person with a disability, the most significant element that the research identified was that "somebody" consciously or

unconsciously designed the problem. Fundamental to all these problems are the attitudes, beliefs, assumptions and goals of those involved. The problems of the future are proposed to become more and more complex resulting in wicked problems. These wicked problems will be innately problems of human need and will require empathy and a deep understanding of all the stakeholders. Therefore it will take a process like design thinking to bridge the gap between the need and the solutions required in the future. Design thinking's potential and value is not only in creating solutions. Design thinking's potential is allowing people to see the potential and value of other people.

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Appendices

Appendix 3.1

3.1 Pre-PD data analysis

3.1.1 Screening questions

All participants answered yes to question 1.1 and 1.2. Therefore all participants were eligible to participate in the PD session.

Question 1.1: Have you trained trainees in an accredited course module or training package unit in the past 12 months? [N=12, responses 12]

100% of participants answered yes.

Question 1 confirmed that all participants had delivered training in the past 12 months, had current knowledge of accredited course modules or training package units.

Question 1.2: Do you have the certificate IV in workplace training and assessment? [N=12, responses 12]

100% of participants answered yes.

The target participants for the research were lecturers within the VET sector of WA. Current Standards for RTOs 2015 requires staff employed in a training role, providing delivery or assessment, under the scope of a RTO to hold as a minimum the Certificate IV in Workplace Training and Assessment. This result should indicate that all participants should have been introduced to the term and / or concept of RA during their Certificate IV training or RTO induction.

3.1.2 Understanding Reasonable adjustment

The following data relates to questionnaire one and establishes the participants' awareness, understanding and application of reasonable adjustment prior to the PD session.

Question 1.3: Have you heard of the term reasonable adjustment?
[N=12, responses 12]

Figure AP3.1 shows that the majority of participants (11) answered **yes** to question 3. Participants who answered yes were required to then answer question 1.4. The participant (1) who answered **no** to question 3 proceeded to question 1.10.

Results of Question 3: Questionnaire 1		
	YES	No
Participants responses	11	1
% of total participants	92%	8%

Figure AP3.1: Question 1.3

Discussion note: The percentage 8% of participants or 1 participant represents a low number of participants who had not heard of the term reasonable adjustment. However the result even though low would still supports the DEEWR (2011) recommendation that the RA requires further promotion in RTOs. RA is a legal obligation and is applies to all RTOs and all staff employed by an RTO.

Possible future research: In what ways could RA be included as part of the induction of all staff employed by an RTO?

Question 1.4: In your own words what is reasonable adjustment?
[N=11, responses 10]

The participant answered in his or her own words what they understood reasonable adjustment to be, see Table 5.1.

It appeared during the initial review of the participant's responses to question four that the participants' explanations were significantly different. However after the responses from the participants were compared with the definitions in Figure AP3.2, representing two Government RA Publications, the colour coded results in Table AP3.2 revealed some similarities between the responses.

Table AP3.1 shows the participants' coloured coded responses collated into similarities. Table AP3.1 shows that all participants (10) responses identified that reasonable adjustment was applicable to learners or students and it required modification to the training delivery and/or assessment. However the use of the word disability was only used in 2 of the explanations. The term 'learning differences' was included in 1 explanation and 'meeting student need' in 2 of the explanations.

The inclusion of words that indicated helping students / learners in 6 of the explanations gives an indication that some of the participants understood RA to mean more than making modifications only. The term learning environment was

mentioned once in the context of making adjustments to class attendance. The concept of on the 'same basis' could loosely be connected in meaning to the explanations that used the words "fair" and to "get the most out of".

Table AP3.1 Frequency of RA definition words compared to participant's definitions

Terms definitions	Term used grouped	Frequency	%
Student / Learner	Student / Students / Individual / Individually	10	100%
	Student	8	
Disability	Learning or physical disabilities / Illness or disability / Learning differences / Capabilities / needs	6	60%
	Disability	2	
Help / Assist	Help / Supporting / Accommodating / Suit / require extra assistance	5	50%
Modifying / Making changes / Modification made	Adjusting / Make adjustment / Making adjustment / adapting / make allowances / make ... changes /	10	100%
	Adjusting	8	
Training delivered / Training delivery / Assessment method / Certification requirements	lesson / mode of delivery / method of teaching / learning / assessment / delivery and assessment / assessment and methods / lessons	10	100%
Learning environment	class attendance / circumstances that may unfold throughout the unit / conditions	1	10%
Same basis as those without disability	Get the most out of / Fair	2	20%

Note: terms are group in closet similarity of term or implied meaning in context of the explanation provided. % are calculated on the participants who responded n=10, not the total number of participants required to respond.

Table AP3.2 Participant's understanding of reasonable adjustment

Participant	Response
P1	Did not give a response
P2	To me it would mean adjusting the lesson within a reasonable variable to suit each student so that each student has a fair chance of understanding by variation.
P3	Adjusting my mode of delivery to suit the need of a student , who may require extra assistance
P4	Adapting your method of teaching to a variety of students for them all to get the most out of the course you are delivering
P5	To make allowances for students who may have an illness or disability which prevents them from doing assessment with the allocated time frame
P6	Supporting and making the necessary changes to accommodate student learning to accommodate their unique learning differences
P7	Adjusting conditions to accommodate students in relation to class attendance , assessment , or circumstances that may unfold throughout the unit
P8	Not required to give a response
P9	To individually make adjustments to assessments while still <i>maintaining the standards & integrity of that assessment</i>
P10	Adjusting delivery and assessment to reflect the capabilities of the individual in relation to the criteria of the unit of competency

P1	Making adjustments to existing assessment and methods to help students with learning or physical disabilities
P12	Adjusting your lessons to suit student needs

Reasonable adjustment in VET is the term applied to modifying the learning environment or making changes to the training delivered to assist a learner with a disability (Queensland VET Development Centre Strategy and Research (Equity), 2010, p.9).

'Reasonable adjustment' is a term used in the education, employment and VET sectors to refer to any modification made to the learning environment, certification requirements, training delivery or assessment method used to help students with disability to access and participate in education and training on the same basis as those without disability. (Reasonable adjustment: A guide to working with students with disability, 2013, p.5)

Word List

Modifying, access, participate, learning environment, making changes, training, assist, learner, disability, modification, certificate requirements, training delivery, assessment method, help, students, access, participate, education, training, same basis, without disability.

Figure AP3.2. Keywords used in Reasonable adjustment definitions.

Discussion note: The result in Table AP3.1 indicates that all of the participants understood that reasonable adjustment was applicable to the modification of training or assessment. There were two responses by the participants RIG and PRP in Table AP3.2 that used the term disability. This could indicate that the other respondents did not know that that RA only applied to student with disability.

Question 1.5: Have you applied reasonable adjustment in the training setting? [N=11, responses 11]

Figure AP3.3 show that 91% (10) of participants answered **yes** to Q1.5 and 9% (1) of the participants answered **no** to question 1.5. The participants who answered **yes** where required to then answer question 1.6. The participant who answered **no** proceeded to question 10.

	YES	No
Participants responses	10	1
% of total participants	91%	9%

Figure AP3.3: Results of Question 1.5

Question 1.6: On the following scale indicate how confident you are in applying reasonable adjustment within the training environment? [N=10, responses 10]

Figure AP3.4 indicates that 60% (6) of participants were somewhat confident, 40% (4) of the participants answered neither confident nor unconfident. Therefore 50% of all of the participants in the research group [n=12] had some confidence in applying RA in the training environment prior to the commencement of the PD.

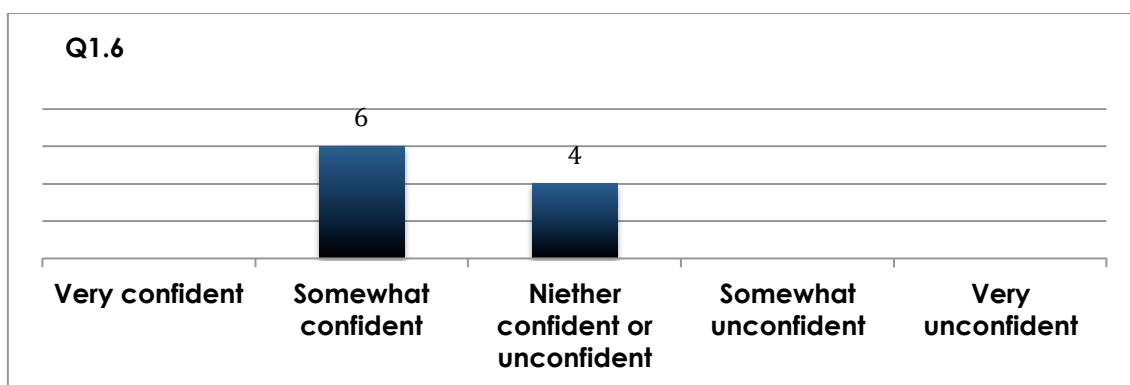


Figure AP3.4: Participant confidence rating in applying reasonable adjustment

Question 1.7: How did you apply reasonable adjustment? [N=10, responses 10]

The types of reasonable adjustments applied by the participants were all related to training delivery or assessment. Figure AP3.5 shows that language literacy numeracy (LLN) issues were identified as one of the most common student needs. The adjustments made to delivery and assessment for LLN included using the services of a specialist LLN Lecturer (CAAVS) and using the Disability Support Services of the RTO. Figure AP3.5 shows that of the 11 adjustment examples seven of the examples relate to an unspecified reason or were grouped as a LLN issue. The remaining four examples were represented by two examples of hearing impairment, one example each of dyslexia and anxiety.

LLN issues are not commonly considered a disability, as they could be the result of an educational gap. Figure AP3.7 shows that there was no reference made to disability type by the participants reporting LLN issues. However LLN issues could be the result of an undisclosed disability. Therefore the LLN issues will be included as reasonable adjustment activities.

Figure AP3.6 shows the types of reasonable adjustment made and the number of participants that had made that type of adjustment. The two most common adjustments were oral answering provide by three participants and extended time provided by 2 participants. Figure AP3.8 provides evidence that participants have demonstrated an understanding of reasonable adjustment through the modification of delivery and assessment to meet student needs.

Disability type	No.
Not specified	3
Mental Health	1

LLN (Language, literacy and numeracy)	4
Hearing	2
Dyslexia	1

Figure AP3.5 Disability types identified in reasonable adjustment activities

Type of adjustment	No.
Communication skills	1
Video Lessons	1
Oral Answers	3
Re-organising times	1
Change Location	1
Scribe	1
Break up assessment	1
Extended time	2
Visual & written instruction	1
Using CAAVS	1
Coloured paper	1
Equipment	1
Practical Assessment	1

Figure AP3.6 Reasonable adjustment activities

Disability	Participant response	Adjustment
Language and Literacy	LL needs, LLN issues	could use verbal questioning, Practical ass, assessment over a period of time
Hearing Impairment	Hearing difficulties	step by step visual & written instructions
Learning Disability	Dyslexia	Coloured paper, extended time,
Not specified		Re-organising times & locations of classroom activities & assessments
Not specified		oral answering, Allowing ascribe, Breaking the assessment into smaller, more manageable sections. Using CAAVS
Mental Health	Anxiety	verbal assessment (one on one)
Not Specified	Student cannot read & write & will not try	Found & recorded video to an ipad so he could watch & repeat practical sessions

Not Specified		communication skills & delivery to suit the individual students needs.
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Figure AP3.7 Types of adjustments applied by participants

MIG	By using different communication skills & delivery to suit the individual students needs.
RIB	I had a student with hearing impairment, I created a learning resource that had step by step visual & written instructions
MIB	Student cannot read & write & will not try. Found & recorded video to an ipad so he could watch & repeat practical sessions till he understood skill & learnt skill
PRP	I did a verbal assessment with a student (one on one) who was uncomfortable talking in front of the class. (Anxiety)
BLU	Adapted assessment tools to allow oral answering to an otherwise written knowledge based assessment. Allowing ascribe to write down answers. Breaking the assessment into smaller, more manageable sections. Using CAAVS and Disability services
LDB	Re-organising times & locations of classroom activities & assessments
RDG	Written assessments - LLN issues - Literacy (writing) - could use verbal questioning, Practical ass. - Do the whole assessment over a period of time due to lack of correct tools & equipment (live works) to complete at 1 time.
PNK	Review & change; assessment method, time allocated, equipment used for task
RIG	Verbal assessment for students with reading disab(sic) coloured paper for dyslexia, extended time frame for assessments
L2DB	Students with LL needs & Hearing difficulties

Figure AP3.8 Participant responses - examples of applying reasonable adjustment

There is limited indication that the participants have used reasonable adjustment in the areas of qualification design or curriculum changes, in particular changes to elective units. The high level of reporting of LLN issues and unspecified reasons are of interest. This could indicate a possible lack of information about the student needs or discussion with student to understand what adjustments or supports are required. There could also be a possible a lack of empathy for the student/s. The following participant's comment about a student that the "Student cannot read & write & will not try". This comment seems to be made without knowledge of the reason why the student has this difficulty.

Question 1.8: Were there any barriers to applying reasonable adjustment in the training environment? [N=10, responses 10]

Q	MDB	MIG	RIB	MIB	PRP	BLU	LDB	R3IB	RDG	PNK	RIG	L2DB
1.6	3.0	4.0	4.0	3.5	3.0	4.0	4.0		3.0	4.0	4.0	3.0
1.8	N/A	Yes	No	Yes	No	Yes	Yes	N/A	No	Yes	Yes	No

Figure AP3.9: Results of Q1.8 compared with Q 1.6.

Figure AP3.9 shows 60% (6) of participants identified that there were barriers in being able to apply reasonable adjustment, 40% (4) of the participants consider there to be no barriers to applying reasonable adjustment. Figure AP3.9 shows the ratings of confidence in applying RA from Q1.6 when compared to the responses to Q1.8 there is an anomaly in the results as three of the participants who said

there were no barriers also had the least confidence in applying RA. A low rating in in confidence would not seem to fit with an answer of no barriers.

Question 1.9: What were the barriers to applying reasonable adjustment?

Figure AP3.10 shows the responses by participants to Q1.9 the responses have been colour coded for data collation. Figure AP3.11 shows the participants identified 7 barrier types in applying reasonable adjustments. The 7 barriers have been grouped into two categories staff and resources. The staff barriers represented 64% of the barriers, which included staff attitudes, staff understanding, time and industry knowledge required by staff to implement reasonable adjustments. The resource barriers represented 36% of the barriers which included equipment, resources and cost required to implement reasonable adjustments.

P2	Sometimes other staff members were barriers, as they weren't thinking outside the square.
P4	We did not have equipment at our disposal
P6	Limited resources , time and equipment to accommodate multiple students in one class
P7	I really wasn't sure if I was being reasonable- just guessing that what I was doing was okay.
P10	What was the industry standard - ie machine speed , Staff understanding of reasonable adjustment
P11	Cost for changes & time on workload
Summary	Staff , equipment , time , resources , unsure/ understanding , cost , knowledge

Figure AP3.10: Participant example of barriers to applying reasonable adjustment

Reason	No.	%	HR	Resources
Staff	2	18%	18%	
Unsure / understanding	2	18%	18%	
Time	2	18%	18%	
Knowledge (Industry)	1	9%	9%	
Equipment	2	18%		18%
Resources	1	9%		9%
Cost	1	9%		9%
Total	11	100%	64%	36%

Figure AP3.11: Types of barriers in applying reasonable adjustment

Discussion note: This result supports the literature review indicating that staff would be one of the contributing factors in creating barriers faced by people with disability accessing VET. The literature also identified issues such as the increasing the training and knowledge of VET practitioners and the increase pressure (time)

on VET practitioners. The participants have identified these as existing within their role and training environment.

“Belief influences
action, and action
influences belief.”



Reasonable Adjustment

Session run sheet

Stage	Time	Resources	Type	Completed
Consent Form	5 minutes	Consent Forms	Individual	5
Questionnaire	5 Minutes	Questionnaire 1	Individual	10
Introduction	5 Minutes	PowerPoint	Individual	15
Step 1 - Framing	10 Minutes	Framing Job Profile	Individual	25
Step 2 - Framing	15 Minutes	Injury profile Empathy Map	Individual	40
Step 3 - framing	10 Minutes	Insights Injury Impact	Individual	50
Step 4 - Framing	20 Minutes	Butchers paper Large sticky notes	Group	70
Step 5 - Ideation	20 Minutes	Sticky notes	Group	90
Step 6 - Experimentation	20 Minutes	Paper Making tape Cardboard	Group	110
Step 7 - Implementation	20 Minutes	As above 1 Member from another team	Group	130
Step 8 - Sell it	10 Minutes	Paper Making tape Cardboard	Group	140
Step 9 - Reframing	20 minutes	PowerPoint Reframing	Group	160
Questionnaire	5 Minutes	Questionnaire 2	Individual	165
Total time Time allocated	165 minutes 180 minutes			

Framing

Employment

One of the key elements of employment and the Disability Discrimination Act (DDA) is the individual's capacity to perform the inherent job duties.

Does the Job descriptions state inherent requirements? More importantly what are the inherent job requirements?

The DDA does not require employers to have written duty statements and where a duty statement does exist it will not necessarily be conclusive. A requirement contained in a duty statement might not be found to be an inherent requirement. The Commission and the courts have emphasised that a requirement is not inherent simply because it is stipulated in a duty statement or contract of employment. Equally, a requirement might not appear on a duty statement but still be found to be an inherent requirement.

The Australian Human Rights Commission proposes that inherent requirements need to be determined in the circumstances of each job. They may include:

- The ability to perform the tasks or functions which are a necessary part of the job productivity and quality requirements
- The ability to work effectively in the team or other type of work organisation concerned
- The ability to work safely.

For instance, an essential activity or "inherent requirement" for a Receptionist's job is the ability to communicate by telephone. But it is not an "inherent requirement" to hold the phone in the hand. Accordingly an accommodation of providing a headset to a Receptionist would enable them to perform the duties required.

It is important to distinguish between what needs to be achieved "inherent job requirements" and how it is achieved the "process, procedure or equipment used".

A person first

Every person with a disability, impairment, loss or health issue is unique and should be treated as an individual. We should never make assumptions about a person's abilities based on a label or diagnosis. The extent to that the barriers, disadvantage or limitations will exist in workplace or employment role.

DISABILITY DISCRIMINATION ACT 1992

Definition of "disability", in relation to a person, means:
 (a) total or partial loss of the person's bodily or mental functions; or
 (b) total or partial loss of a part of the body; or
 (c) the presence in the body of organisms causing disease or illness; or
 (d) the presence in the body of organisms capable of causing disease or illness; or
 (e) the malfunction, malformation or disfigurement of a part of the person's body; or
 (f) a disorder or malfunction that results in the person learning differently from a person without the disorder or malfunction; or
 (g) a disorder, illness or disease that affects a person's thought processes, perception of reality, emotions or judgment or that results in disturbed behaviour;

and includes a disability that:
 (h) presently exists; or
 (i) previously existed but no longer exists; or
 (j) may exist in the future (including because of a genetic predisposition to that disability); or
 (k) is imputed to a person.

To avoid doubt, a disability that is otherwise covered by this definition includes behaviour that is a symptom or manifestation of the disability.

What are an employer's obligations under the DDA?

An employer's main obligations under the DDA are

- not to discriminate directly by less favourable treatment
- not to discriminate indirectly by treatment which is less favourable in its impact
- to make reasonable adjustments where required
- to avoid and prevent harassment.



Mode
Investigate / Plan



Mode
Individual



Mode
5 mins

Direct discrimination

It is discrimination under the D.D.A. to treat a person less favourably, because of his or her disability, than a person without that disability would be treated in the same or similar circumstances. This is also known as direct discrimination.

A person is treated less favourably by treatment which is

- different and
- disadvantageous or reasonably regarded by the person as disadvantageous.

A requirement for reasonable adjustment does not excuse less favourable treatment

Performing the inherent job requirements

Inherent requirements

The DDA does not make it unlawful to dismiss, or to refuse or fail to employ, a person who cannot perform the inherent requirements of the job - see DDA section 15(4). In the Commission's view this also applies to

- promotion or transfer of existing employees
- inquiries, examinations or actions which are reasonably intended for the purpose of determining a person's ability to perform the inherent requirements of the relevant job.

Direct compliance with a prescribed law

The DDA does not make unlawful actions in direct compliance with a law which is a prescribed law for the purposes of section 47(2) of the DDA.

Health or safety

In the Commission's view this provision only restates what in any event is the effect of the DDA in relation to any disability, because it will be an inherent requirement of any job to be able to work without unacceptable risks to self or others. However

- this does not apply to exclusions or restrictions which are not in fact reasonably necessary but are based rather on outdated information, inaccurate assumptions or prejudice
- this does not imply that people with a disability generally present increased health or safety risks or that any particular person with a disability presents such a risk.*

How can employers comply with the DDA as well as health and safety requirements?

- People with a disability are entitled to equal protection of health and safety

- A person who cannot work safely does not meet the inherent requirements of the job
- In deciding whether a person can meet inherent requirements, possible reasonable adjustment must be taken into account
- Health and safety must be protected by non-discriminatory means wherever possible.

What types of adjustment may be required?

Reasonable adjustment may include one or more of the following types of adjustment:

- Adjustments to workplace or work related premises, equipment or facilities, including provision of additional equipment or facilities
- Adjustments to work related communications or information provision, including the form or format in which information is available
- Adjustments to work methods
- Adjustments to work arrangements, including in relation to hours of work and use of leave entitlements
- Adjustments to methods used for testing, assessment or selection
- Adjustments to work related rules or other adjustments to enable a person to comply with rules as they exist
- Access to training, transfer, acting, trial or higher duties positions, traineeships, or other forms of opportunity to demonstrate or develop capacity in a position
- Provision of interpreters, readers, attendants or other work related assistance
- Permitting or facilitating a person to use equipment or assistance provided by the person with a disability or by another person or organisation
- Providing training to co-workers or supervisors
- Other work-related adjustments.

What information should employers use for and about reasonable adjustments?

Assumptions about people with a disability frequently include inaccurate beliefs about the type or level of adjustment needed (if any) and the potential costs of adjustment.

An employer (or other person covered by the DDA) should not simply assume that a person with a disability will not be able to perform some of the requirements of a particular job or that any adjustment will be too difficult or costly. Equally, it should not be assumed that



Mode
Investigate / Plan



Mode
Individual



Mode
5 mins

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Mode
Investigate / Plan



Mode
Individual



Mode
5 mins

no adjustments are necessary. Employers should make adequate efforts to ascertain whether any reasonable adjustment is necessary and possible.

An employer who fails to make reasonable adjustments where required will be exposed to liability for unlawful discrimination as well as missing the opportunity of using the abilities of present and potential employees most effectively.

The author does not guarantee, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this handout.

The Author recommends that users exercise their own skill and care with respect to their use handout and that users carefully evaluate the accuracy, currency, completeness and relevance of the material for their purposes.

This handout is not a substitute for independent professional advice and users should obtain any appropriate professional advice relevant to their particular circumstances.

Unjustifiable hardship / unreasonableness

Reasonable adjustment does not include adjustments which would impose an unjustifiable hardship on the employer (in the case of adjustments to enable a person to perform the inherent requirements of a job) or which would be unreasonable. The Commission's view is that in this area the concepts of unreasonableness and unjustifiable hardship are often closely equivalent in effect.

Inherent requirements of the job

Reasonable adjustment required by the DDA need not, in the Commission's view, include

- Changing the inherent requirements of the job concerned
- Maintaining a job which would otherwise be altered or abolished
- Assigning performance of some inherent requirements to another employee
- Creation of a different job or
- Promotion or transfer to a different job

Except as part of a program of training or rehabilitation reasonably likely to enable the person to perform the requirements of the job concerned within a reasonable period.

Other Laws and Acts

There are other Laws and Acts that relate to employment and discrimination, these are State, Territory and Federal Laws and Acts. Consideration of the processes and procedures of the organisation should also take into account.

Disclaimer & Use of information

This information has been prepared as part of a training / research activity ("the context") the information is provide for that purpose and context only and should not be used outside of that context or for any other purpose. This information is not provided as advise.



Mode
Investigate / Plan











Mode
Individual



Mode
5 mins

Job Profile

DO	SAY	THINK	FEEL
<div> /  /  / </div> <div>Mode Reflective</div>	<div> / </div> <div>Mode Individual</div>	<div> / </div> <div>Mode Timed - 15-20 mins</div>	

Job Role / Duties

DO

Example of do: Do you use machinery, computers, tools, your feet, your hands, your eyes.
Do you work alone, with others, in a small group, in a large group
Do you have to read manuals, equipment read outs, labels

SAY

Example of say: Do you have to use communication to be persuasive, passive, compassionate, assertive, welcoming
Do you have to present to a group, individual or co-workers
Do you have to talk on the phone, write documents, fill in forms, send emails

THINK

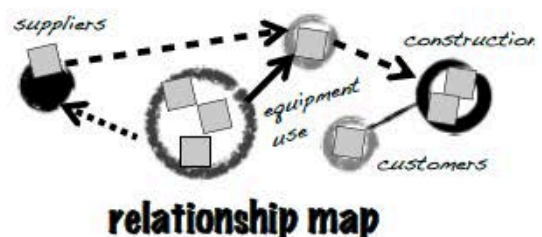
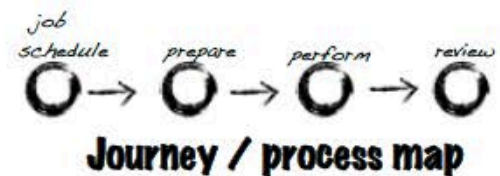
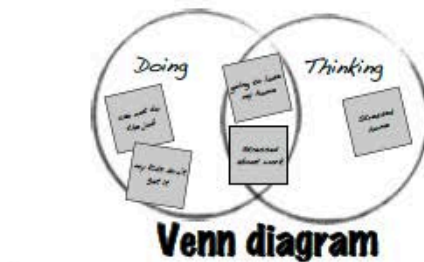
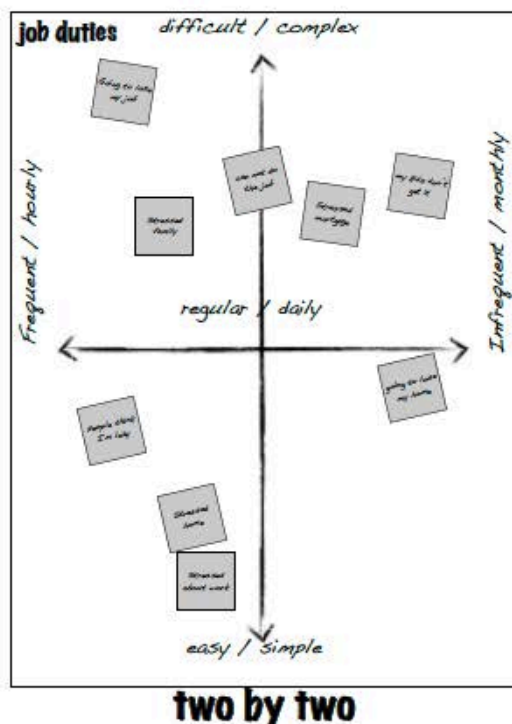
Example of think: Do you have to use problem solving, analytical thinking, make calculations in your head
Do you have to have confidence, be able to think quickly, be able to reflect on what you have done, weigh up options, make critical decisions

FEEL

Example of Feel: Do you need to be able to feel hot / cold, soft / hard, smooth / rough
Do you need to be able to feel a pulse, grip strength, if you are pushing or pulling, is the force softly or hard
Do you need to be able to have compassion for others, understand how others

feel, be mindful of others feelings

Visualising the data



Mode
Reflective

Mode
Individual

Mode
Timed - 15-20 mins

Injury Profile

Injury Type: Mental Health

Injury occurred: Outside of work

This injury profile is to be used by you to consider the impact of this injury on you and how it would effect your capacity to do your job.

Job Role

Your job role / duties for this exercise is your current job role / duties.

Medical

MEDICATIONS:

- Anxiety medication
- Antidepressants

REHABILITATION:

- Counselling once per week for 3 months
- Medication

APPOINTMENTS:

- Counselling once per week for 3 months
- Doctors appointment every 4 weeks for medication review

Psychological

MEMORY

- Poor short term memory
- Easily distracted
- Reduced concentration

MOOD

- Feeling down and unmotivated
- Feeling anxious
- Not communicating
- Easily stressed or Overwhelmed
- Panic Attacks

FUNCTION

- Disturbed sleep
- Can not think clearly
- Disorganised
- Aggressive communication with co-workers, customers and family members
- You have a fear of public speaking

Physical Impact

PHYSICAL RESTRICTIONS:

- No physical injury
- Tiredness And Fatigue
- Over sleeping
- Anxiety reaction

RESULTS:

- Unsure of physical capacity
- Shaking
- Not waking up for work
- Sweating

Recovery time

SHORT TERM

- Expected reduction of symptoms within 3-6 months
- Reduction is dependent on medication and behavioural changes
- Memory should improve
- Tiredness and fatigue should improve

LONG TERM

- Anxiety will be an ongoing condition, however symptoms may reduce over time with management
- Depression is believed to be the result of the impact of the anxiety and your current situation
- Depression may reduce if anxiety levels can be controlled

Current impact

WORK

- You have currently had 2 months off work
 - Sick leave - None available
 - Holiday leave - None available
- Employer is concerned about capacity to be employed in current role
- Job productivity is 20%

PERSONAL

- You are the sole income earner in your household
 - You have a large mortgage
 - You have 2 kids still at school
 - You have limited family support
 - You are worried about your future
 - You feel tired and frustrated
 - You are arguing with your partner



Mode
Investigate / Plan



Mode
Individual



Mode
5 mins

Injury Profile

Injury Type: Executive functioning

Where: Brain Injury (frontal lobe)

Injury occurred: Outside of work

This injury profile is to be used by you to consider the impact of this injury on you and how it would affect your capacity to do your job.

Job Role

Your job role / duties for this exercise is your current job role / duties.

Medical

MEDICATIONS:

- Anti-seizure medication *Topamax* (side effects: Slow thinking or movements, difficulty concentrating, speech problems, especially difficulty thinking of specific words, memory problems, lack of coordination, trouble walking, confusion, nervousness, aggressive behaviour, irritability, mood swings, depression, headache, extreme tiredness)

REHABILITATION:

- Psychiatrist - Medications and Interventions
- Speech and language pathologist - 1 X per week
- Neuropsychologist
- Neurologist
- Vocational counsellor

APPOINTMENTS:

- Traumatic brain injury nurse specialist X 2 per week - at home
- Speech pathologist - 1 X per week
- Neurologist - 1 X 3months
- Neuropsychologist - 1 X months
- Vocational counsellor - prior to discharge from hospital, did not attend

Psychological

MEMORY

- Reduced concentration
- Reduced short term memory

MOOD

- Extremes of moods (Ups and Downs)

FUNCTION

- Short attention span
- Moody
- Language difficulties (spelling, some reading, some speech issues)

- Over confidence / intelligent
- Talkative
- Disorganised

Physical Impact

PHYSICAL RESTRICTIONS:

- Minor balance issues may be a result of medication

RESULTS:

- May move slowly or stop during movement

Recovery time

SHORT TERM (6 -12 MONTHS)

- Medication may be removed (12 months)
- Speech will fully recover
- Memory and concentration will get better with intervention
- Organisation skills should improve

LONG TERM (12 MONTHS +)

- Behaviour could improve if rehabilitation and interventions are followed

Current impact

WORK

- No time off work, injury occurred while on long service leave for 3 months.
- Job productivity is 90%, a lot of errors, conflicts with customers and staff, projects do not get completed
- You have not disclosed your injury to work but they notice something different
- You move around a lot, can not sit still

PERSONAL

- You do not have a partner
- You rent a house, which is 20km from work
- You have 2 large dogs and cat
- You have good family support, though you consider them to be interfering
- You have unrealistic expectations of your skills and future
- Closest public transport is the train
- You can not drive a vehicle (12 months)
- You are drinking alcohol heavily (side effect of dizziness and tiredness)



Mode
Investigate / Plan



Mode
Individual



Mode
5 mins

Empathy Map

Context
Work
Home
Community

Internal
Co-workers
Manager
Human
Resources

External
Customers
Suppliers
Family
Friends
Support Org
Medical Org
Rehabilitation
Org
Union

Say

Think

Do

Feel

External

Internal

Context

Fear | Pain | Loss

Opportunities | Help

Needs | Gain | Goals | Wants

Obstacles | Hindrances

Mode
Reflective

Mode
Individual

Timed - 20-30 mins

Mode

Injury Impact

DIRECT IMPACT	INDIRECT IMPACT
<div></div>	<div></div>



Mode
Reflective



Mode
Individual



Mode
Timed - 15-20 mins

Injury Impact

DIRECT

Example of direct:

What direct impact does the injury have on work duties?
- The person's ability to do the job.

Unable to operate machinery due to injury to one hand
Unable to list objects due to injury to leg
Disorganised because of short term memory
Unable to present to a group due to anxiety

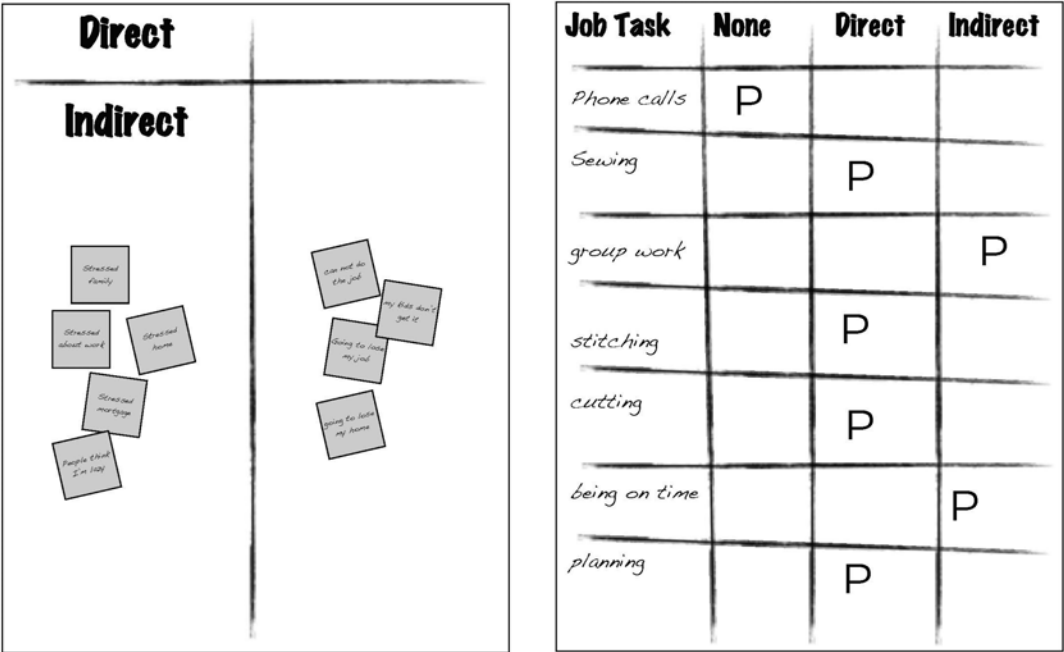
INDIRECT

Example of say:

What indirect impact does the injury have?
- The impact on the person due to other peoples behaviour, events or things outside of work, other issues that the injury has caused outside of work.

Other staff complain about lack of productivity
Late to work because of transport issues
Late to work because of fatigue and tiredness
Worried about future and family increases anxiety and stress levels
Pain causes concentration and work tolerance issues

Visualising the data



Theme cluster / Headlines

INSIGHTS

INSIGHT
From theme clusters or headlines

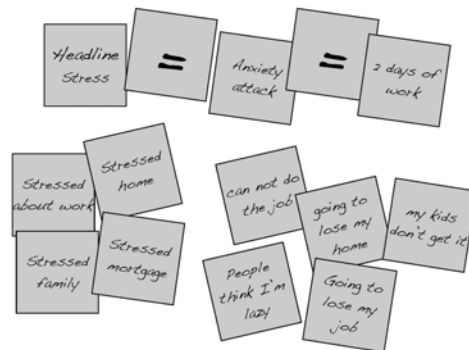
Stress is the main trigger for an anxiety attack and loss of productivity for the staff member.

Turn over for examples



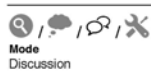
1. Cluster into themes
2. Find a headline for the theme
3. Convert the headline into a statement

- Example themes
- Physical tasks
 - People tasks
 - Communication tasks
 - organisation and planning tasks
 - Feelings
 - Fears
 - Goals
 - Helpers
 - Hindrances
 - Emotions
 - Groups
 - People
 - Fatigue
 - Ability
 - Strengths
 - Weaknesses
 - Opportunities
 - Threats
 - Mood
 - Memory
 - Attendance
 - Co-worker
- Manager
 - Customer
 - Family
 - Outside of work
 - At work
 - Direct
 - Indirect
 - Reactions
 - Symptoms
 - Talking
 - Presentation
 - Work completion
 - Interpersonal skills
 - Essential
 - Non-essential
 - Desirable
 - Timeframe
 - Recovery
 - Medication
 - Behaviour
 - Support
 - Access
 - transport




INSIGHT
From theme clusters or headlines

Stress is the main trigger for an anxiety attack and loss of productivity for the staff member.



Problem Statements



Key statement

Theme cluster / Headlines

Key
Fear | obstacles

Key
Goals | Motivators | Help

PROBLEM STATEMENT

STAKEHOLDER Stated in empathetic language	A valued staff member with an anxiety issue	needs a way to
NEED Stated as a need (verb)	Reduce stress in the workplace	because
INSIGHT From theme clusters or headlines	Stress is the main trigger for an anxiety attack and loss of productivity for the staff member.	

Turn over for examples



Mode
Reflective



Mode
Individual



Mode
Timed - 20-30 mins

Problem Statements

Problem Statement

Somebody or a group
(the stakeholder/s)
needs a way to
redesign, reduce,
experience, learn, do, be,
become, have something
(the need)
Because
X causes/needs **Y**, and
Y is essential to success,
good health, work,
education, life, future,
happiness

STAKEHOLDER Stated in empathetic language	A valued staff member with an anxiety issue	needs a way to
NEED Stated as a need (verb)	Reduce stress in the workplace	because
INSIGHT From theme clusters or headlines	Stress is the main trigger for an anxiety attack and loss of productivity for the staff member.	

STAKEHOLDER Stated in empathetic language	A valued staff member with a memory issue	needs a way to
NEED Stated as a need (verb)	System to help remember construction sequence	because
INSIGHT From theme clusters or headlines	The staff member knows all the steps to construction but gets lost and mixed up because of interruptions and/or distractions from staff or customers which decrease productivity.	

Mode
Reflective

Mode
Individual

Mode
Timed - 20-30 mins

Ideation | Divergent thinking

INDIVIDUAL AND GROUP IDEATION

BRAINSTORMING AS AN IDEATION TOOL

Brainstorming is a great activity to generate fresh thoughts and new energy. Create a safe and positive atmosphere for your brainstorm so that the team can come up with all kinds of wild ideas.

If the group is new to brainstorming then you start with a warm-up exercise this, could be done as an individual or a group activity.

What it gets you

A lot of fresh, new ideas.

What to keep in mind

Brainstorming is a fast and dynamic activity. Have your team stand up and encourage people to speak up and keep it short: only take a few seconds to explain an idea.

Warm-up brainstorm:

- How might we find a needle in a haystack?
- Never could we ever: brainstorm things you could never do at your institute
- Get visual: ask everyone to draw his or her neighbour in a minute. Share drawings.

1. Select a facilitator
2. Present your topic / problem
3. Introduce the rules of brainstorming
4. Equip everyone for participation
5. Start with a warm-up
6. Move one by one
7. Keep the energy high

WAYS TO KEEP DIVERGENT THINKING GOING

Limited budget, no budget, huge budget, not a technology solution, technology solution, add things, subtract things, look at it from another way or perspective, what is the opposite, how do other people do it, what are the small things, what are the large things, is it experience, a thing, an attitude, does it need to be physical, can it be a change of doing, thinking, feeling or saying, who has the problem, what is the problem, defer judgement, combine ideas, adapt, diversify, embrace the strange, find the connection, don't be afraid of failure. Use the six thinking hats process, feelings, facts, creativity, benefits, cautions.

Brainstorming Rules

DEFER JUDGEMENT.

There are no bad ideas at this point; there will be plenty of time to narrow them down later.

ENCOURAGE WILD IDEAS.

Even if an idea doesn't seem realistic, it may spark a great idea for someone else.

BUILD ON THE IDEAS OF OTHERS.

Think "and" rather than "but."

STAY FOCUSED ON TOPIC.

To get more out of your session, keep your brainstorm question in sight.

ONE CONVERSATION AT A TIME.

All ideas need to be heard, so that they may be built upon.

BE VISUAL.

Draw your ideas, as opposed to just writing them down. Stick figures and simple sketches can say more than many words.

GO FOR QUANTITY.

Set an outrageous goal—then surpass it. The best way to find one good idea is to come up with lots of ideas.

BE CREATIVE.

Open your mind to possibilities and new approaches. If you feel yourself resisting because of a bias or assumption recognise it and let it go.



Mode
Do



Mode
Group



Mode
Timed - 20 mins

Experimentation | Convergent thinking

“Make, do, play.”

Step 1

Select promising ideas

What it gets you

A selection of ideas that the whole team is excited about taking further.

What to keep in mind

Don't spend too much time trying to identify the best thing to do. Trust your gut feeling—as long as there is excitement about an idea, it will be a good basis to work from.

Dare to leave behind some ideas at this point. You can always come back to your larger pool of brainstorm ideas and try out a new one if your first choice does not lead to success.

How

- Cluster the ideas
- Vote for favourite ideas
- Discuss the results

Step 2

Do a reality check

What it gets you

A first step toward bringing your idea to life.

What to keep in mind

A reality check might seem discouraging, as you may have to let go of some ideas. Focus on the possibility of actually building an idea in the long term to keep up your collective energy. Consider doing these check-ins on a regular basis as you move forward with idea development

How

- Find out what your idea really is about
- What are the constraints
- Can new ideas come from these constraints
- Evolve the idea
- Archive ideas

Step 3

Build to Think

What it gets you

A first, tangible expression of your idea that you can share and learn from.

What to keep in mind

Seeing an idea come to life, even in a very basic form, injects enthusiasm and energy into a team's work. It is an opportunity to experiment and have fun while learning about the idea.

Prototyping is not about getting it right the first time: the best prototypes change significantly over time. Give yourself permission to try, and fail, and try again.

Sometimes your worst ideas teach you the most. Prototyping them may lead to new inspiration.

Challenge yourself to come up with at least three different versions of your idea to test multiple aspects of the possible solutions your team has come up with.

How

- Pick an idea
- Build a prototype
- Share back your discovery / prototype / learning

WHAT TYPES OF PROTOTYPES

- Create a storyboard
- Create a diagram
- Create a story
- Create an ad
- Create a mock-up
- Create a model
- Create a role-play



Experimentation

Experimentation Sessions

You can break your team into small groups to work on different ideas or work together in one idea. Make sure that your energy is high and everyone is contributing.

“don't be afraid of failure” or more importantly “fail often”.

Prototyping Ideas

Create a storyboard

Visualise the complete experience of your idea over time, through a series of images, sketches, cartoons or even just text blocks. Stick figures are great—you don't need to be an artist. Use Post-it Notes or individual sheets of paper to create the storyboard so you can rearrange their order.

Create a diagram

Map out the structure, network, journey or process of your idea. Try different versions of your visualisation. Design new ways of doing things, create examples of the process or work tasks.

Create a story

Tell the story of your idea from the future. Describe what the experience would be like. Write a newspaper article reporting about your idea. Write a job description. Create a letter to be sent to the manager.

Describe your idea as if it were published on the organisation's website as a good news story or example of success.

Create an ad

Create a fake advertisement that promotes the best parts of your idea. Have fun with it, and feel free to exaggerate shamelessly. Eg., The reason that you will want work here is that we care about people.

Create a mock-up

Build mock-ups of digital tools and websites with simple sketches of screens on paper. Paste the paper mock-up to an actual

computer screen or mobile phone when demonstrating it.

Create a model

Put together simple three-dimensional representations of your idea. Use paper, cardboard, pipe cleaners, fabric and whatever else you can find. Keep it rough and at a low fidelity to a start, and evolve the resolution over time.

Create a role-play

Act out the experience of your idea. Try on the roles of the people that are part of the situation and uncover questions they might ask.

Create a new way

Create a new way of doing something. Re-write, re-design, re-structure, re-invent, replace or remove. What can be added or subtracted to make it work. Use the six thinking hats process: feelings, facts, creativity, benefits, caution.



Try / Apply / Implement

“From prototype to reality”

Step 1

Try - Feedback

What it gets you

Activities and appointments to get feedback on your prototype. A chance to test in the real environment or situation. It gives space for failure, improvement and success.

What to keep in mind

Feedback is helpful even if your idea is still rough. It's easier to informally share early prototypes with friends and colleagues first, before setting up feedback sessions. Don't be afraid of the sceptics: often, you will learn the most from your worst critic. Whenever possible make sure you can feedback from the primary users, before moving into the final stage.

How

- Decide who to involve
- Plan the interactions and logistics
- Invite participants
- Track your progress

Getting feedback

What it gets you

Helps to refine your idea.

What to keep in mind

Create the sense of a collaborative work session to build on and develop your prototype, rather than a critique. Avoid yes/no questions and invite people to think of improvements.

Questions

- **Use open questions**
 - Avoid questions that give a yes/ no answer. Do you think this will work?
- VS
- What do you like about this approach?
- **Use questions that encourage constructive feedback**
 - If you could change one thing about this prototype what would it be?
- **Arrange questions**
 - Start with general impressions, (their first thoughts), then specific feedback (what is good, what can be improved), then open up the conversation, (If you could take this prototype further what would you do?)

Facilitate

- **As for honest and open feedback**
 - You will need to be neutral and use feedback as a way of improving the idea, explain it is a prototype and will need refinement which is why you are seeking feedback
- **Make sure people giving feedback can experience or use the prototype.**
 - If possible give multiple versions of the prototype or different prototypes
- **Adapt on the fly**
 - If participants want to make changes, try and make them then a there, then seek further feedback

Capture the feedback

- **Make notes or draw**
 - Use sticky notes or note pads to capture how people feel, play, use or comment on the prototype
- **Use photographs / video**
 - If changes are made record the before and after
 - Photograph it being used
- **Record conversations**
 - Record conversations with people, this will allow you to review and find themes or new learning



Mode
Investigate / Plan



Mode
Group



Mode
Incremental - 20-90 mins

Step 2

Apply

What it gets you

Iterations of your concept based on feedback.

What to keep in mind

Do not take feedback literally. You don't need to incorporate every suggestion you receive. Look at feedback as an inspiration for better ways of solving the problem. For example, instead of reasoning that "The participants didn't like the couches, so we shouldn't have any," think of it as "They didn't like the couches so maybe the space should offer a more active feel." Then explore what that means and find new ideas.

How

- **Cluster the feedback**
 - Group together similar feedback to create themes
- **Evaluate the relevance**
 - Does it meet the original need that was identified
 - Has the idea or prototype moved a way from the original problem
 - Does it still hold true as a solution
- **Iterate your prototype**
 - Add new feedback to create a new idea or prototype

Step 3

Implement

What it gets you

Your prototype or idea put into place.

What to keep in mind

Your needs may be larger than the time or resources you have. Don't give up, creatively work within those constraints. Find partners or others to help you. Give the big picture of your idea first show them your excitement and energy.

- **Who**
 - Who will benefit from it, Who will help, who makes the final decision, who are the champions, who is responsible
- **When**
 - How long will it take, when is it needed, when should it be reviewed, when would

it be implemented, when should it be used

- **What**
 - What will it cost, what do you need to make it or create it, what will it do, improve, achieve, What will it cost, What will be the disadvantages, what will be the advantages, What are the gaps.
- **Where**
 - Where would it be implement, where does it have most advantage, where is it need, where should it be implemented
- **Create a plan**
 - Get agreement from the stakeholders on the plan, timeframes, review points and responsibilities
- **Find partner or build links**
 - Who can be involved, who wants to be involved, who can gain from being involved, specify who will do what, what are the needs
- **Does it have a wider benefit**
 - Does this prototype or idea benefit more than the one person or group?

Sell the idea

Make sure that you build a human story that talks about positive outcomes for the person and the organisation.

- **Know your audience**
 - Know who you are talking to and make sure you focus the conversation to their needs.
- **Highlight the potential**
 - Demonstrate the advantages, the upside and the potential for wider benefit.
- **Communicate the Value**
 - Explain the value it brings to all stakeholders be specific in your examples.
- **Be specific about your needs**
 - What do you need from them, approval, money, support, resources, time
- **Ask for contribution**
 - Invite then to help develop or improve the idea of prototype



Mode
Investigate / Plan



Mode
Group



Mode
Incremental - 20-90 mins

Brainstorming Sessions

Group

What it gets you

The setup for a dynamic brainstorming session.

What to keep in mind

When you make brainstorming part of another activity, lesson or meeting, remember that generating ideas is a mode that participants need a little time to get into. Create the time and space for a transition into that mindset.

Start with a well defined topic

Think about what you want to get out of the session. Select several focused brainstorm questions.

Choose an appropriate space

Reserve a room with sufficient wall space, where participants can comfortably get up from their chairs and move around.

Provide tools to capture ideas

Gather materials like Post-it Notes, markers, paper and snacks: don't underestimate the power of sugar in a brainstorming session.

Invite a diverse group of people

Consider involving people who are not part of your team, as they will have a fresh perspective. Include six to eight people.

Plan for 45-60 minutes

Keep brainstorming sessions to an hour at most, to maintain focus and energy.

Individual

What it gets you

An introduction to brainstorming and ideation. This is a good approach if the group or individuals are new to ideation. Doing it individually gives people a chance to do it without feeling judged or influenced by others.

What to keep in mind

When you make brainstorming part of another activity, lesson or meeting, remember that generating ideas is a mode that participants need a little time to get into. Create the time and space for a transition into that mindset.

Start with a well defined topic

Think about what you want to get out of the session. Select several focused brainstorm questions.

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Reserve a room with sufficient wall space, where participants can comfortably get up from their chairs and move around.

Provide tools to capture ideas

Gather materials like Post-it Notes, markers, paper and snacks: don't underestimate the power of sugar in a brainstorming session.

Invite a diverse group of people

Consider involving people who are not part of your team, as they will have a fresh perspective. Include six to eight people.

Plan for 5-15 minutes

Keep individual sessions to 20 minutes at most, to maintain focus and energy.



Accommodating Employees with Mental Health Impairments

(Note: People with mental health impairments may develop some of the limitations discussed below, but seldom develop all of them. Also, the degree of limitation will vary among individuals. Be aware that not all people with mental health impairments will need accommodations to perform their jobs and many others may only need a few accommodations. The following is only a sample of the possibilities available. Numerous other accommodation solutions may exist.)

Questions to Consider:

1. What limitations is the employee with a mental health impairment experiencing?
2. How do these limitations affect the employee and the employee's job performance?
3. What specific job tasks are problematic as a result of these limitations?
4. What accommodations are available to reduce or eliminate these problems? Are all possible resources being used to determine possible accommodations?
5. Has the employee with a mental health impairment been consulted regarding possible accommodations?
6. Once accommodations are in place, would it be useful to meet with the employee with a mental health impairment to evaluate the effectiveness of the accommodations and to determine whether additional accommodations are needed?
7. Do supervisory personnel and employees need training regarding mental health impairments?

Accommodation Ideas:

Attendance:

- Allow flexible work environment:
- Flexible scheduling
- Modified break schedule
- Leave for counselling
- Work from home/Flexi-place

Concentration:

- Reduce distractions in the work area:
 - Provide space enclosures, sound absorption panels, or a private office

- Allow for use of white noise or environmental sound machines
- Allow the employee to play soothing music using an earphones and computer or music player
- Plan for uninterrupted work time
- Purchase organizers to reduce clutter
- Increase natural lighting or provide full spectrum lighting
- Allow flexible work environment:
- Flexible scheduling
 - Modified break schedule
 - Leave for counselling
 - Work from home/Flexi-place
 - Divide large assignments into smaller tasks and goals
- Use auditory or written cues as appropriate
- Restructure job to include only essential functions
- Provide memory aids such as schedulers, organisers, or email applications

Emotions:

- Encourage the use of stress management techniques to deal with frustration
- Allow the presence of a support animal
- Allow telephone calls during work hours to doctors and others for needed support
- Allow flexible breaks
- Refer to employee assistance program (EAP)

Fatigue:

- Allow flexible work environment:
- Flexible scheduling
- Modified break schedule
- Leave for counselling
- Work from home/Flexi-place
- Provide a goal-oriented workload
- Reduce or eliminate physical exertion and workplace stress
- Implement ergonomic workstation design

Memory:

- Allow use of job coach
- Provide mentor
- Provide minutes of meetings and trainings
- Use auditory or written cues as appropriate
- Allow additional training time
- Provide written checklists
- Use a colour coding scheme to prioritise tasks
- Use notebooks, planners, or sticky notes to record information
- Provide labels or bulletin board cues to assist in location of items



Mode
Investigate / Plan / Do



Group / Individual



Resource

Organisation:

- Use daily, weekly, and monthly task lists
- Use calendar with automated reminders to highlight meetings and deadlines
- Use electronic organizers or mobile devices
- Divide large assignments into smaller tasks and goals
- Use a colour coding scheme to prioritise tasks

open channels of communication to ensure any transitions are smooth, and providing short weekly or monthly meetings with employees to discuss workplace issues can be helpful.

Supervisors can also implement management techniques that support an inclusive workplace culture while simultaneously providing accommodations. Successful techniques include the following:

Panic Attacks:

- Allow the employee to take a break and go to a place where she/he feels comfortable to use relaxation techniques or contact a support person
- Identify and remove environmental triggers such as particular smells or noises
- Allow the presence of a support animal
- Sleep Disturbances:
 - Allow for a flexible start time
- Combine regularly scheduled short breaks into one longer break
- Provide a place for the employee to rest during break
- Allow the employee to work one consistent schedule
- Provide a device such as a Doze Alert or other alarms to keep the employee alert
- Provide work areas with sunlight or other natural lighting

- Provide positive praise and reinforcement,
- Provide day-to-day guidance and feedback,
- Provide written job instructions via email,
- Develop clear expectations of responsibilities and the consequences of not meeting performance standards,
- Schedule consistent meetings with employee to set goals and review progress,
- Allow for open communication,
- Establish written long term and short term goals,
- Develop strategies to deal with conflict,
- Develop a procedure to evaluate the effectiveness of the accommodation,
- Educate all employees on their right to accommodations,
- Provide sensitivity training to co-workers and supervisors,
- Do not mandate that employees attend work related social functions, and
- Encourage all employees to move non-work related conversations out of work areas.

Stress:

- Refer to counselling and EAP
- Allow telephone calls during work hours to doctors and others for needed support
- Allow the presence of a support animal
- Allow flexible work environment:
 - Flexible scheduling
 - Modified break schedule
 - Leave for counselling
 - Work from home/Flexi-place

Co-worker Interaction:

- Encourage the employee to walk away from frustrating situations and confrontations
- Provide partitions or closed doors to allow for privacy
- Provide disability awareness training to co-workers and supervisors

Working Effectively:

Many accommodation ideas are born from effective management techniques. When organisations are implementing workplace changes, it is important that key personnel recognise that a change in the environment or of supervisors may be difficult. Maintaining



Mode
Investigate / Plan / Do



Group / Individual



Resource

Accommodating Employees with Executive Function Impairments

(Note: People with Executive Function impairments may develop some of the limitations discussed below, but seldom develop all of them. Also, the degree of limitation will vary among individuals. Be aware that not all people with mental health impairments will need accommodations to perform their jobs and many others may only need a few accommodations. The following is only a sample of the possibilities available. Numerous other accommodation solutions may exist.)

Questions to Consider:

1. What limitations is the employee with an impairment experiencing?
2. How do these limitations affect the employee and the employee's job performance?
3. What specific job tasks are problematic as a result of these limitations?
4. What accommodations are available to reduce or eliminate these problems? Are all possible resources being used to determine possible accommodations?
5. Has the employee with the impairment been consulted regarding possible accommodations?
6. Once accommodations are in place, would it be useful to meet with the employee to evaluate the effectiveness of the accommodations and to determine whether additional accommodations are needed?
7. Do supervisory personnel and employees need training regarding Executive Function impairments?

Accommodation Ideas:

Time Management: Individuals may experience difficulty managing time, which can affect their ability to mark time as it passes incrementally by minutes and hours. It can also affect their ability to gauge the proper amount of time to set aside for certain tasks. As a result, it may be difficult to prepare for, or remember, work activities that occur later in the week, month, or year.

- Divide large assignments into several small tasks or chunks
- Set a timer to sound an alarm after assigning ample time to complete a task
- Provide a checklist of assignments

- Plan and structure times of transition and shifts in activities
- Supply an electronic or handheld organiser and train on how to use it effectively
- Use a wall calendar to emphasise due dates
- Develop a colour-coded system (each colour represents a task, or event, or level of importance)
- Allow co-worker or supervisor to add entries on the calendar or to double-check entries added by the employee

Memory: Individuals may experience memory deficits, which can affect their ability to complete tasks, remember job duties, or recall daily actions or activities.

- Provide written instructions and checklists
- Allow use of a recorder
- Allow additional training time for new tasks
- Offer training refreshers
- Provide minutes of meetings and trainings
- Use flow-chart to indicate steps in a task
- Provide verbal or pictorial cues
- Use a color coding scheme to prioritise tasks
- Use notebooks, planners, or sticky notes to record information
- Use sticky notes as reminders of important dates or tasks
- Provide labels or bulletin board cues to assist in location of items

Concentration: Individuals may experience decreased concentration, which can be attributed to auditory distractions and/or visual distractions. Distractions such as office traffic and employee chatter, opening and closing of elevator doors, and common office noises such as fax tones and photocopying can be problematic.

To reduce auditory distractions:

- Provide a noise cancelling headset
- Hang sound absorption panels
- Provide a white noise machine
- Relocate employee's office space away from audible distractions
- Redesign employee's office space to minimise audible distractions



Mode
Investigate / Plan / Do



Group / Individual



Resource

To reduce visual distractions:

- Install space enclosures (cubicle walls)
- Reduce clutter in the employee's work environment
- Redesign employee's office space to minimise visual distractions
- Relocate employee's office space away from visual distractions
- Breaks for mental fatigue, including short walks, getting up for a drink of water, and rotating through varied tasks
- Job restructuring so the most difficult tasks are performed at the time of day the employee has the most mental energy or stamina

Organisation and Prioritisation:

Individuals may have difficulty getting or staying organised, or have difficulty prioritising tasks at work.

- Develop colour-code system for files, projects, or activities
- Use a colour coding scheme to prioritise tasks
- Use weekly chart to identify daily work activities
- Use a job coach to teach/reinforce organisation skills
- Assign a mentor to help employee
- Allow supervisor to assign prioritisation of tasks
- Use electronic organisers, mobile devices, and e-mail reminders
- Assign new project only when previous project is complete, when possible
- Provide a "cheat sheet" of high-priority activities, projects, people, etc.
- Organise work space to reduce clutter
- Provide separate work areas with complete sets of supplies for differing tasks
- Schedule a weekly time to clean / organise work space
- Take time at the end of each day to organise and set up for the next day

Multi-tasking:

Individuals may experience difficulty performing many tasks at one time. This difficulty could occur regardless of the similarity of tasks or the frequency of performing the tasks.

- Separate tasks so that each can be completed one at a time
- Create a flow-chart of tasks that must be performed at the same time, carefully labelling or colour-coding each task in sequential or preferential order
- Provide individualised/specialised training to help the employee learn techniques for

multi-tasking (e.g., typing on a computer while talking on the phone)

- Identify tasks that must be performed simultaneously and tasks that can be performed individually
- Provide specific feedback to help the employee target areas of improvement
- Remove or reduce distractions from work area
- Supply ergonomic equipment to facilitate multi-tasking
- Clearly represent performance standards such as completion time or accuracy rates

Paperwork:

Individuals may experience difficulty completing paperwork efficiently and effectively. This may be due in part to workplace distractions and difficulty with time management, disorganisation, or prioritisation.

- Automate paperwork by creating electronic files when possible
- Use speech recognition software to enter text or data into electronic files
- Save time filling out paper forms by completing information in advance, using pre-filled forms, or adhering pre-printed stickers
- Use checklists in place of writing text
- Provide templates of letters or e-mails
- Colour-Code forms for easy identification
- Re-design commonly used forms
 - Use large font
 - Double space or triple space
 - Provide adequate space for hand-written response

Social Skills:

Individuals may have limitations in exhibiting appropriate social skills. This might manifest itself as interrupting others when working or talking, demonstrating poor listening skills, and inability to communicate effectively.

- Provide a job coach / buddy to help understand different social cues
- Identify areas of improvement for employee in a fair and consistent manner
- Use training videos to demonstrate appropriate behaviour in workplace
- Encourage employees to minimise personal conversation, or move personal conversation away from work areas
- Provide sensitivity training (disability awareness) to all employees
- Encourage all employees to model appropriate social skills
- Adjust the supervisory method to better fit the employee's needs



Mode
Investigate / Plan / Do



Group / Individual



Resource

- Adjust method of communication to best suit the employee's needs
- Allow the employee to work from home

Attendance:

Individuals may have difficulty getting to work promptly because of the varied activities, processes, and interruptions they may experience while preparing to leave their home and/or during their commute.

- Allow flexible work environment:
 - Flexible scheduling
 - Modified break schedule
 - Work from home/Flexi-place

Getting to Work on Time:

Employers can have time and attendance standards for all employees. Because getting to work on time is the responsibility of the employee, the following ideas are for employees who are having trouble getting to work on time because of executive function deficits:

- Have a routine of putting and keeping things in their place (keys, phone, glasses)
- Prepare for the next day's work the night before
- Create a checklist for yourself and others
- Place sticky notes on the door, dashboard, or wherever you will see them
- Turn off distractions — including cell phones
- Set a timer or a programmable watch to pace yourself

Hyperactivity/Impulsivity: This could be disruptive to the work environment or could inhibit efficient and effective work performance.

- Provide structured breaks to create an outlet for physical activity
- Utilise a job coach / buddy to teach/reinforce techniques to control impulsivity
- Allow the employee to work from home
- Review conduct policy with employee
- Adjust method of supervision to better prepare employee for feedback, disciplinary action, and other communication about job performance
- Provide private workspace where employee will not disturb others by tapping, humming, or fidgeting

Reading from a paper copy:

- Convert text to audio, use text to speech on computer, smart phone, tablet
- Provide printed documents in electronic format to allow for digital reading

- Provide larger print
- Double space the text of print material
- Provide materials that are type-written, in a font that is not italicised; if handwritten material must be provided, use print, not cursive
- Scan the documents into a computer and use Optical Character Recognition (OCR), which will read the information aloud
- Use a reading pen, which is a portable device that scans a word and provides auditory feedback

Reading from a computer screen:

- Use voice output software, also called screen reading software, which highlights and reads aloud the information from the computer screen
- Use an on-screen "ruler" or strip or screen highlighting software to help focus and read from a computer screen.
- Alter colour scheme on computer screen to suit the employee's visual preferences
- Adjust the font on computer screen to suit the employee's visual preferences

Spelling:

Individuals might have difficulty spelling, which can manifest itself in letter reversals, letter transposition, omission of letters or words, or illegible handwriting.

- Allow use of reference materials such as dictionary or thesaurus
- Provide electronic and talking dictionaries
- Use word prediction software that displays a list of words that typically follow the word that was entered in a document
- Use word completion software that displays sample words after someone starts typing part of a word
- Allow buddy, co-worker, or supervisor to proofread written material

Writing:

Individuals might have difficulty with the cognitive or the physical process of writing.

Cognitive process of writing:

- Employees might have difficulty organising a written project, identifying themes or ideas, structuring sentences or paragraphs, or identifying and/or correcting grammar errors.
- Use Inspiration software, a computerised graphic organizer
- Use Text-help Read & Write Gold, a software program assisting with spelling, reading, and grammar.



Mode
Investigate / Plan / Do



Group / Individual



Resource

- Provide electronic/talking dictionaries and spellcheckers
- Create written forms to prompt the employee for information needed
- Allow the employee to create a verbal response instead of a written response
- Permit use of reference books such as a thesaurus or dictionary

Physical process of writing:

Individuals may have difficulty with the physical process of writing. It may be difficult to fill in blanks, bubble in dots, line up numbers or words in a column, on a line, or within a margin. Handwriting may be illegible.

- Provide writing aids
- Use line guides and column guides
- Supply bold line paper
- Permit type-written response instead of hand-written response
- Allow use of personal computers, including tablet, smart phone.
- Use Inspiration software, a computerised graphic organizer,
- Use speech recognition software that recognises the user's voice and changes it to text on the computer screen
- Allow employee to audio record meetings

Mathematics:

Individuals could have difficulty recognising or identifying numbers, remembering sequencing of numbers, understanding the mathematical sign or function (whether symbol or word) or performing mathematical calculations accurately and efficiently.

- Use scratch paper to work out math problems
- Permit use of fractional, decimal, statistical, or scientific calculators
- Provide talking calculator
- Use calculators or adding machines with large display screens
- Use construction calculator or cheat sheets
- Provide talking tape measure
- Use talking scales
- Use pre-measurement guides or jigs
- Post mathematical tables at desk or in work area

Speaking/Communicating:

Individuals may have difficulty communicating with co-workers or supervisors. Poor communication may be the result of underdeveloped social skills, lack of experience/exposure in the workforce, shyness, intimidation, behaviour disorders, or low self-esteem.

- To help facilitate communication, provide advance notice of topics to be discussed in meeting
- To reduce or eliminate anxiety, provide advance notice of date of meeting when employee is required to speak
- Allow employee to provide written response in lieu of verbal response
- To reduce or eliminate the feeling of intimidation, allow employee to have a friend or co-worker attend meeting

Working Effectively:

Many accommodation ideas are born from effective management techniques. When organisations are implementing workplace changes, it is important that key personnel recognise that a change in the environment or in supervisors may be difficult. Maintaining open channels of communication to ensure any transitions are smooth, and providing short weekly or monthly meetings with employees to discuss workplace issues can be helpful.

Supervisors can also implement management techniques that support an inclusive workplace culture while simultaneously providing accommodations. Successful techniques include the following:

- Provide positive praise and reinforcement,
- Provide day-to-day guidance and feedback,
- Provide written job instructions via email,
- Develop clear expectations of responsibilities and the consequences of not meeting performance standards,
- Schedule consistent meetings with employee to set goals and review progress,
- Allow for open communication,
- Establish written long term and short term goals,
- Develop strategies to deal with conflict,
- Develop a procedure to evaluate the effectiveness of the accommodation,
- Educate all employees on their right to accommodations,
- Provide sensitivity training to co-workers and supervisors,
- Do not mandate that employees attend work related social functions, and
- Encourage all employees to move non-work related conversations out of work areas.



Mode
Investigate / Plan / Do



Group / Individual



Resource

Accommodating Employees with Physical Impairments

(Note: People with Physical impairments may develop some of the limitations discussed below, but seldom develop all of them. Also, the degree of limitation will vary among individuals. Be aware that not all people with an impairments will need accommodations to perform their jobs and many others may only need a few accommodations. The following is only a sample of the possibilities available. Numerous other accommodation solutions may exist.)

Questions to Consider:

1. What limitations is the employee with an impairment experiencing?
2. How do these limitations affect the employee and the employee's job performance?
3. What specific job tasks are problematic as a result of these limitations?
4. What accommodations are available to reduce or eliminate these problems? Are all possible resources being used to determine possible accommodations?
5. Has the employee with the impairment been consulted regarding possible accommodations?
6. Once accommodations are in place, meet with the employee with an impairment to evaluate the effectiveness of the accommodations and to determine whether additional accommodations are needed?
7. Do supervisory personnel and employees need training regarding physical impairments?

Fatigue/Weakness:

- Reduce or eliminate physical exertion and workplace stress
- Schedule periodic rest breaks away from the workstation
- Allow a flexible work schedule and flexible use of leave time
- Allow work from home
- Implement ergonomic workstation design
- Provide a scooter or other mobility aid if walking cannot be reduced

Gross Motor Impairment:

General

- Modify the work-site to make it accessible
- Provide parking close to the work-site
- Provide an accessible entrance
- Install automatic door openers
- Provide an accessible restroom and break room
- Provide an accessible route of travel to other work areas used by the employee
- Modify the workstation to make it accessible
- Make sure materials and equipment are within reach range
- Move workstation close to other work areas and break rooms
- Allowing more time for the commute (to allow time for restroom breaks), allowing work at home, and a transfer to office closer to home.

Industrial

- Provide overhead structure for lifting devices
- Modify the work area to make it adjustable
- Place frequently used tools and supplies at or near waist height
- Provide low task chairs for work that cannot be brought to waist height
- Provide stand/lean stools and anti-fatigue mats for standing work
- Make wheelchairs, scooters, industrial tricycles, or golf carts available if walking long distances is required
- Provide compact lifting devices to push and pull supplies and tools from storage

Office Settings

- Provide a height adjustable desk
- Ergonomic equipment such as foot rests and ergonomic chairs.
- Move workstation close to common use office equipment
- Provide low task chair and rolling safety ladder to access high and low file drawers and supplies
- Provide a cart to move files, mail, and supplies
- Provide a lazy Susan carousel or desktop organisers to access frequently used materials

Service Settings

- Provide anti-fatigue mats and stand/lean stools for functions requiring long periods of standing
- Provide a height adjustable desk and ergonomic chair



Mode
Investigate / Plan / Do



Group / Individual



Resource

- Move workstation close to commonly used office equipment
- Provide compact lifting devices to push and pull stock and supplies from shelves
- Provide carts to move supplies and stock

Medical Settings

- Provide a spring-bottomed linen cart
- Make patient lifting and transfer devices available
- Make wheelchairs, scooters, industrial tricycles, or golf carts available if walking long distances is required
- Train employees on proper lifting techniques and on proper use of patient lifting and transfer devices
- Provide powered beds for transporting patients
- Provide adjustable exam tables
- Provide a height adjustable desk and ergonomic task chairs

Restricted use of one hand or one leg:

- **Driving:** Steering wheel balls and spinner knobs can assist with grasping a steering wheel.
- left foot gas pedals are helpful for individuals with right leg limitations.
- **Working with Tools:** Tool balancers, tool holders, and ergonomic/pneumatic tools are useful for individuals who have gripping limitations.
- **Lifting Materials, Products, and People:** Compact lifting devices, vacuum material handling, and winches are useful for moving materials and products. For transferring and moving people, patient lifts are helpful.
- **Entering Information into the Computer:** Speech recognition, alternative input devices (e.g., one-handed keyboards, expanded keyboards, miniature keyboards, alternative mice, and switches) are alternatives to using a standard keyboard. One-handed keyboard software is available to convert a "traditional" keyboard that is more conducive to one-handed entry.
- **Manipulating Office Equipment:** An individual with use of one hand may have difficulty manipulating blinds, accessing a telephone, using a staple remover, and cutting materials. Remote-controlled blinds are alternatives for manipulating blinds, and large button telephones and voice activated databases can assist with telephone access. Page turners and book-holders can help with manipulating paperwork and binders, and writing aids

and reachers may eliminate the need for extended periods of grasping. Filing modifications (e.g., file carousel, electronic filing systems) and properly placed jigs may also be useful.

- **Use on machinery:** Using jigs for holding, creating support devices or platforms, using clamps and holders, modifying machinery to allow for foot and hand control on safety switches or controls.

Activities of Daily Living:

- Allow use of a personal attendant at work
- Allow use of a service animal at work
- Make sure the facility is accessible
- Move workstation closer to the restroom
- Provide accessible restroom and toilet aids
- Grab bars assist individuals with movement and balance
- Allow longer breaks

Ergonomic Analysis

Worker:

- What psychosocial factors are influencing the worker? (work pace, stress load, job control, co-worker & manager relationships, sense community)
- What types of personal protective equipment are used?
- What are the worker's anthropometric data? (their measurements, physical and functional capacity,)

Workstation:

- What are the dimensions of the workstation?
- Is the keyboard placed low enough so that the operator's posture feels comfortable?
- Does the work surface allow the user the ability to adjust work surface heights and angles?
- What equipment is fixed/moveable and where is it located in relation to the worker?
- What are the general environmental factors? Document noise levels, flooring material, lighting, and air quality.
- Does the job include repeated and sustained exertions?
- What is the work pace?
- Does the job entail forceful exertions, such as gravity, friction, and reaction forces?
- What is the duration and frequency of awkward postures such as flexion, extension, and deviation?



Mode
Investigate / Plan / Do



Group / Individual



Resource

- Has glare been diffused with panel diffusers and glare screens?
- Has the air quality of the workstation been checked for comfortable temperature variation and adequate circulation?

Working Effectively:

Many accommodation ideas are born from effective management techniques. When organisations are implementing workplace changes, it is important that key personnel recognise that a change in the environment or in supervisors may be difficult. Maintaining open channels of communication to ensure any transitions are smooth, and providing short weekly or monthly meetings with employees to discuss workplace issues can be helpful.

Supervisors can also implement management techniques that support an inclusive workplace culture while simultaneously providing accommodations. Successful techniques include the following:

- Provide positive praise and reinforcement,
- Provide day-to-day guidance and feedback,
- Provide written job instructions via email,
- Develop clear expectations of responsibilities and the consequences of not meeting performance standards,
- Schedule consistent meetings with employee to set goals and review progress,
- Allow for open communication,
- Establish written long term and short term goals,
- Develop strategies to deal with conflict,
- Develop a procedure to evaluate the effectiveness of the accommodation,
- Educate all employees on their right to accommodations,
- Provide sensitivity training to co-workers and supervisors,
- Do not mandate that employees attend work related social functions, and
- Encourage all employees to move non-work related conversations out of work areas.



Mode
Investigate / Plan / Do



Group / Individual



Resource

Reframing

Training for a Job

What can we learn and what can we use from the work environment to help us to assist students in the training environment.

The process used to do a job analysis and adjustment can be used to create reasonable adjustments in training.

A person first

Every person with a disability, impairment, loss or health issue is unique and should be treated as an individual. We should never make assumptions about a person's abilities based on a label or diagnosis. The extent of the barriers, disadvantage or limitations that will exist in the training environment should be accessed on an individual basis.

DISABILITY DISCRIMINATION ACT 1992

Definition of "disability" in relation to a person, means:

- (a) total or partial loss of the person's bodily or mental functions; or
- (b) total or partial loss of a part of the body; or
- (c) the presence in the body of organisms causing disease or illness; or
- (d) the presence in the body of organisms capable of causing disease or illness; or
- (e) the malfunction, malformation or disfigurement of a part of the person's body; or
- (f) a disorder or malfunction that results in the person learning differently from a person without the disorder or malfunction; or
- (g) a disorder, illness or disease that affects a person's thought processes, perception of reality, emotions or judgment or that results in disturbed behaviour;

and includes a disability that:

- (h) presently exists; or
- (i) previously existed but no longer exists; or
- (j) may exist in the future (including because of a genetic predisposition to that disability); or
- (k) is imputed to a person.

To avoid doubt, a disability that is otherwise covered by this definition includes behaviour that is a symptom or manifestation of the disability.

Before we make assumptions

EMPLOYMENT

- Is there an employer engaged or is the student in a similar job role?
 - This could indicate what is working and what needs adjustment
- Is there an employment agency or employment support available?
 - Does the support have knowledge of adjustments or employment options?
- Does the student have a network or support for future employment?
 - This could assist you in making adjustments and future employment.
- Are there other students or people with that disability or impairment already working in the industry in a that job role or similar?
 - This would indicate that the job can be adjusted or the disability does not effect the inherent job requirements.

Qualification design

- Is there flexibility in the packaging rules?
 - What are the core units?
 - What are the elective units?
 - Can electives be substituted/ replace to reduce barriers or increase access?
- Is the course being delivered and assessed at the correct level?
- Are there any assumptions / practices that align training to employer needs not AQF or qualification level?

Consider qualification design in relation to the concept of the "inherent job duties". If the core units are the inherent skills and knowledge then there should be some flexibility around the elective units.

As with a job it is important to distinguish between what needs to be achieved "inherent job requirements", "training outcome", or "skills and knowledge and how it is achieved, learnt or demonstrated the "process, procedure or equipment used".

AQF LEVEL 1

Application of knowledge and skills

Graduates at this level will apply knowledge and skills to demonstrate autonomy in **highly structured and stable contexts and within narrow parameters.**

AQF LEVEL 2

Application of knowledge and skills

Graduates at this level will apply knowledge and skills to demonstrate autonomy and **limited judgement in structured and stable contexts and within narrow parameters.**



AQF LEVEL 2**Application of knowledge and skills**

Graduates at this level will apply knowledge and skills to demonstrate **autonomy and judgement and to take limited responsibility in known and stable contexts within established parameters.**

Barriers

- What barriers exist for the student to be able to participate in training?
- What are the direct and indirect barriers?
- Have you consider assumptions and attitudes as part of the barriers?
- Are there barriers outside of the training environment that may impact on participation or completion.

Empathy

- Have you been in the person shoes? (the empathy map)
- Have you meet with and discussed with the student and support person/s (if appropriate) the students goals and desired outcome of the training?
- Have you discussed what they perceive the barriers to be, have they got ideas of how to make adjustments?

Adjustments

- Have you considered what possible adjustments would need to be made?
- Consider carefully the concept of time and time based training. Adjustments around time should be consider initially in two areas
 - Time based assessments (are they appropriate and relevant to work practices)
 - Time allowed to gain competence. A student may need to re-enrol a number of times before gaining competence this should not be a barrier to participation and skills acquisition.
- In a competency-based training environment, learners are not required to study for a specified number of weeks or months; however, your RTO must still be able to identify and explain any significant variations from the time periods described in the AQF. (<http://www.asqa.gov.au>)

Course and qualification integrity

- It is also important to maintain the qualification and course integrity, adjustments should not be made that will
 - Devalue or have negative impact on the course outcomes or course integrity.

- Create an Occupational Health and Safety risk
- Break or contravene any law or is an unlawful act.

Behaviour and code of conduct

- Appropriate code of conduct and behaviour should be consider within the training environment and the work environment
- Conduct or behaviour within the training environment that would see a student without disability removed or exited from training then appropriate action or re-training should be taken.
- Consideration should be given to the severity of the action or behaviour, the risk to others or themselves
- if such an act would see an employee with or without a disability dismissed within a work environment then appropriate action or re-training should be taken.

Competency

- The student is in training and as such should be trained appropriately and be given task / duties appropriate to their level of competency.
- Students should not be rushed or pushed to perform duties or task that they are unfamiliar with or uncomfortable doing.
- Students who achieve some competency (eg.40%) have had a successful training experience. The student may require further training over a longer period of time to become fully competent.

WHAT IS AN ADJUSTMENT

For the Disability Standards for Education 2005, each of the following is an adjustment: (a) a measure or action (or a group of measures or actions) taken by an education provider that has the effect of assisting a student with a disability:

- in relation to an admission or enrolment — to apply for the admission or enrolment; and
- in relation to a course or program — to participate in the course or program; and
- in relation to facilities or services — to use the facilities or services;

on the same basis as a student without a disability, and includes an aid, a facility, or a service that the student requires because of his or her disability;



- (b) an adjustment mentioned in subsection 7.2 (4);
 (c) if a change is made to an adjustment mentioned in paragraph (a) or (b) — the adjustment as affected by the change.

REASONABLE ADJUSTMENTS

(1) For these Standards, an adjustment is reasonable in relation to a student with a disability if it balances the interests of all parties affected.

Note: Judgements about what is reasonable for a particular student, or a group of students, with a particular disability may change over time.

- (2) In assessing whether a particular adjustment for a student is reasonable, regard should be had to all the relevant circumstances and interests, including the following:
- (a) the student's disability;
 - (b) the views of the student or the student's associate, given under section 3.5;
 - (c) the effect of the adjustment on the student, including the effect on the student's:
 - (i) ability to achieve learning outcomes; and
 - (ii) ability to participate in courses or programs; and
 - (iii) independence;
 - (d) the effect of the proposed adjustment on anyone else affected, including the education provider, staff and other students;
 - (e) the costs and benefits of making the adjustment.

MAKING ADJUSTMENTS

Key statements:

- Before the education provider makes an adjustment for the student, the education provider **must consult** the student, or an associate of the student
- In deciding whether to make a particular reasonable adjustment for a student, the education provider **must**:
 - assess whether there is any other reasonable adjustment that would be less disruptive and intrusive and no less beneficial for the student; and
 - assess whether the adjustment may need to be changed over the period of a student's education or training.
- The education provider **must** take reasonable steps to ensure that any adjustment required to be made is made within a reasonable time.

Disclaimer & Use of information

This information has been prepared as part of a training / research activity ("the context") the information is provided for that purpose and context only and should not be used outside of that context or for any other purpose. This information is not provided as advice.

The author does not guarantee, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this handout.

The Author recommends that users exercise their own skill and care with respect to their use handout and that users carefully evaluate the accuracy, currency, completeness and relevance of the material for their purposes.

This handout is not a substitute for independent professional advice and users should obtain any appropriate professional advice relevant to their particular circumstances.



Appendix 5.1

Research Session 1

Presenter
Russell Thom

Master of Arts by Research

Applying Design Thinking methodologies as
professional development tool for
Reasonable Adjustment for Vocational
Education and Training practitioners in WA.

Presenter
Russell Thom

Supervisors
Dr Stuart Medley
Dr Chris Kueh

Thank you for attending
and being a valuable
part of this research.

Presenter
Russell Thom

Research

Please complete

- Questionnaire 1
- Consent Forms

What is reasonable adjustment?

It is a part of the

- Disability Discrimination Act,
- Disability Standards for Education
- It is a legal obligation of all education providers.

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Presenter | Russell Thom



LIGHT DUTIES



REASONABLE
ADJUSTMENT

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Complex Problems

“we cant solve problems by using the same kind of thinking we used when we created them”(Mielach, 2012).

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What are we doing today?

Framing

understand the context and problem

Ideation

brainstorm ideas for adjustments

Experimentation

Select and make, play & do

Implement

Try, apply and implement

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Presenter | Russell Thom

What are we doing today?

Reframing

Apply to a new context and problem

Research

Questionnaires X 2

Consent forms

Photographs

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Framing

You have been injured
outside of work and
now need to make
adjustments to enable
you to continue work

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Presenter | Russell Thom

Framing

Step 1

Individual Activity – 10 minutes

- Complete the job profile
- Use sticky notes or write on sheet

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Framing

Step 2

Individual Activity – 15 minutes

- Using the injury profile complete the empathy map with as much information as you can
- Use sticky notes or write on sheets

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Presenter | Russell Thom

Framing

Step 3

Individual Activity – 10 minutes

- From your empathy map create theme clusters and headlines
- Visuals the job profile
- Create an injury impact visualisation

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Framing

Step 4

Group Activity – 20 minutes

- Create group themes and headlines
- Create problem statements

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Framing completed

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Presenter | Russell Thom

Ideation

Step 5

Group Activity – 20 minutes

- Pick a problem
- Brainstorm as many ideas as you can to solve the problem be creative.
 - Start the first 2 minutes individually

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Experimentation

Step 6

Group Activity – 20 minutes

- Pick a solution
- Make, do, play create the solution
 - Experiment with the idea make multiple versions

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Try / Apply / Implement

Step 7

Group Activity – 20 minutes

- Get feedback from a member of another group
- Create a plan on how it could be implemented

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Sell it

Step 8

Group Activity – 10 minutes

- Present your solution to the group.

Reframing

Reframing

Step 9

Group Activity – 20 minutes

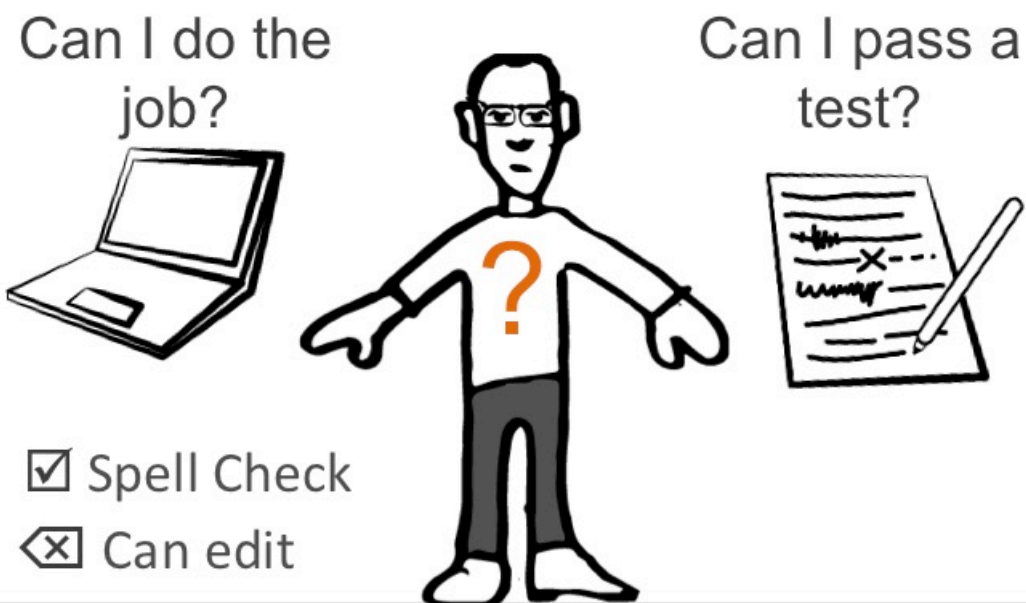
- Can this be applied to reasonable adjustments in training?
- Create a 2 minute presentation of what you have learnt and how you could apply your learning

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Work

Training



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Reframing

- A person first
- Before we make assumptions
 - Employment
 - Qualification design
 - Bias, assumptions & attitudes
 - Consult with the person

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Reframing

Ask | Awareness | Action

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Reframing

- Empathy
- Barriers
 - Direct / Indirect
- Adjustments
 - Time & competence
 - reasonable

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Reframing

- Behaviour and code of conduct
- Health and Safety
- Inherent job requirements
- Success, goals and outcomes

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Reasonable adjustment

**What needs to be
achieved
VS
how it is achieved**

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Reframing

Be aware of **what needs to be achieved**
“inherent job requirements”, “training
outcome”, or “skills and knowledge”

VS

**how it is achieved, learnt or
demonstrated** the “process, procedure or
equipment used”.

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Research

Please complete

– Questionnaire 2